

Journal

OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION

AVMA Convention—Cleveland, August 19-22, 1957

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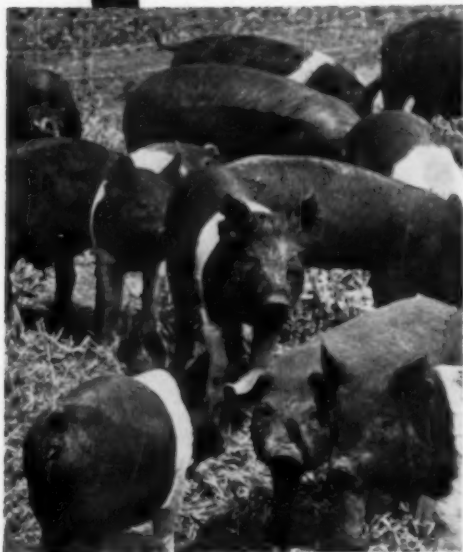
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\$15.00 per Annum

Single Copies, \$.75 Prepaid in U.S.

Canada and Pan American Countries, \$15.50; Foreign, \$16.50

Published semimonthly at 600 S. Michigan Ave., Chicago 5, Ill., by the American Veterinary Medical Association. Second class mail privileges authorized at Chicago, Ill., January, 1956. Additional entry at Mendota, Ill.



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Correspondence

February 4, 1957

Dear Sir:

May I correct an erroneous impression readers of the J.A.V.M.A. may obtain from the extract of Prof. G. Ramon's statement dealing with rabies in Israel, published in the JOURNAL of 15 January, p. 60. His misinterpretation of the reasons for the increase of rabies in Israel in 1954 and subsequent years, following a very successful control program assisted by the World Health Organization from late 1950 to 1953 (Bull. W.H.O. 10, (1954): 743-752) may be due to an incomplete knowledge of the facts at the time he wrote his report. Prof. Ramon states:

"... One must, therefore, ask whether the use of Flury vaccine might be an indirect cause (through neglect of application of sanitary regulations) or a direct cause of this rapid recrudescence of rabies. One should consider whether among dogs, and in particular in pups, the virus vaccine has not regained the virulence attenuated through passages in the chicken embryo. . . ."

The use of Flury vaccine was neither an indirect nor direct cause of the recrudescence of the disease. The principal and probably only reason for the resurgence of rabies was the inability of Israeli authorities to continue effective control of stray dogs and this was because of a lack of finances when faced with other urgent health and veterinary problems which were given priority. This had to be done despite the full knowledge of the Israeli authorities that such a step would in all likelihood soon result in a recrudescence of the disease. It was not difficult to anticipate what actually occurred; within a short time unvaccinated stray dogs outnumbered vaccinated animals. Thus, with the disease smoldering enzootically in the jackal wildlife population and in stray dogs on the border areas a flare-up was inevitable. It is significant, however, that relatively few vaccinated dogs contracted rabies during the past several years, despite the fact that an appreciable portion of the vaccinations has consisted of only one inoculation of Flury or Kelev strain vaccine given between three and six years preceding the years 1954 to 1956 when the flare-up occurred. A report on this subject is being prepared for publication in the Bull. W.H.O.

With respect to Prof. Ramon's second suggestion that the Flury virus had regained virulence through passage in dogs, particularly pups, there is not the slightest evidence either experimentally or in the field that this has ever occurred. In fact, all evidence to date is against such an occurrence. This should not be confused with the occasional pathogenicity of low-egg passage Flury strain vaccine in pups under three months of age, or in animals other than dogs (for example, cattle) where use of the low-egg passage Flury vaccine is not recommended (see W.H.O. Expert Committee Reports

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on Rabies, W.H.O. Techn. Rep. Ser. 82 (1954), and 128 (1957) in press). Even if the Flury virus were, in rare instances, excreted in the saliva of dogs, its epizootiological significance would be negligible under most circumstances.

I discussed the above considerations at the annual meeting of the International Office of Epizootics in May, 1956, when Prof. Ramon's report was presented, but would like them reproduced in the JOURNAL so that the record can be kept straight insofar as W.H.O. responsibility is concerned.

Sincerely yours,

s/Martin M. Kaplan, V.M.D.,
Chief, Veterinary Public Health Section,
Division of Communicable Disease Services.



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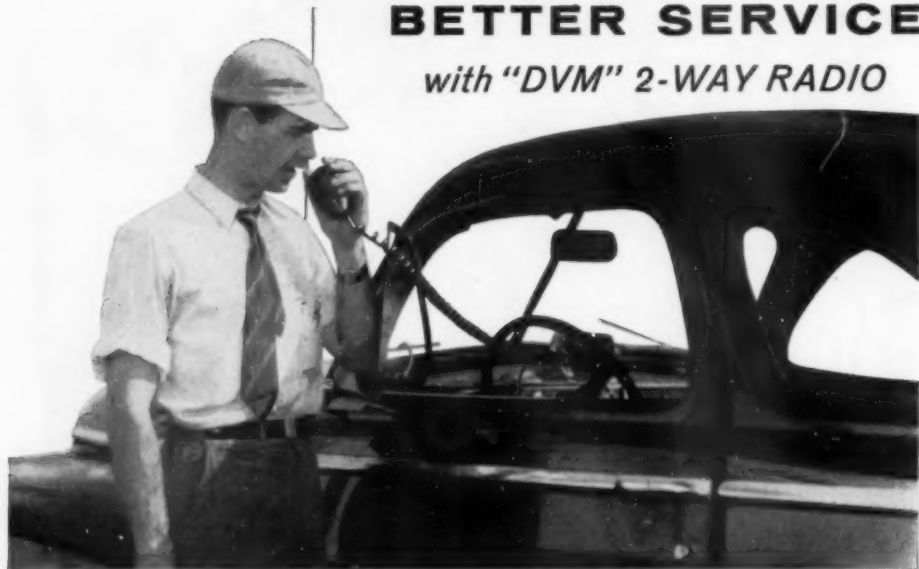
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1. Carter, G. R.:
 Canad. J. Comp. Med.
 Vet. Sc. 29:299
 (August) 1954.

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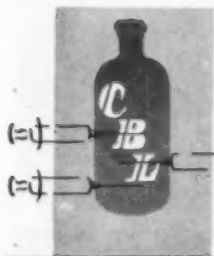
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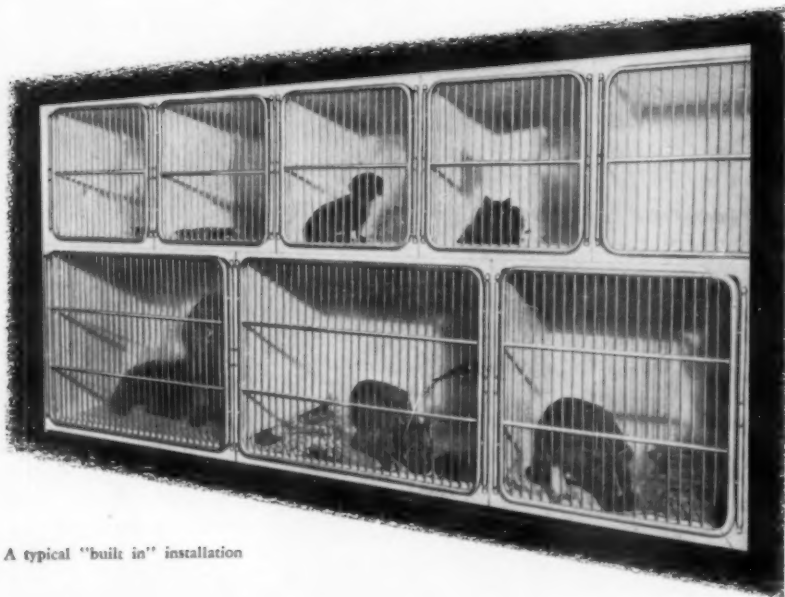
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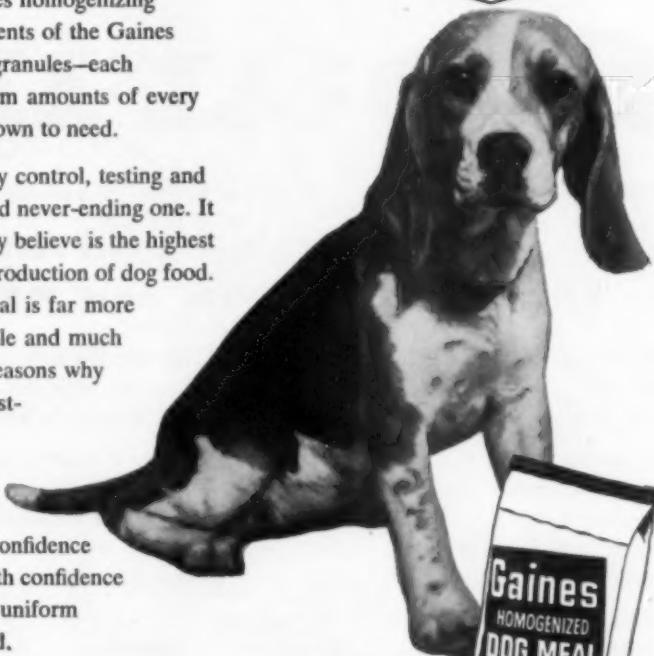
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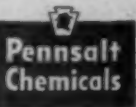
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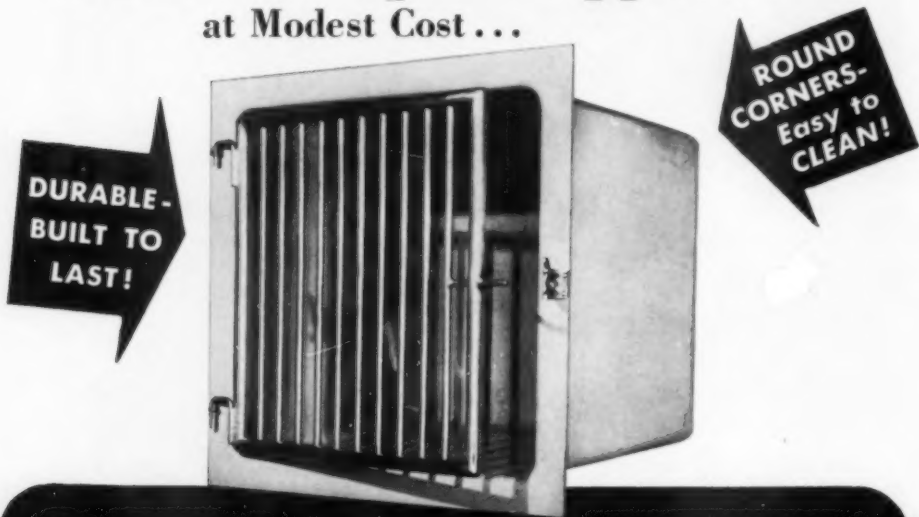


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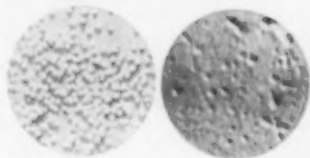
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	No. Steers	No. Days	AVERAGE WEIGHTS			AVERAGE DAILY GAIN			COST OF FEED PER DAY			FEED CONVERSION			COST PER LB. OF GAIN		
			Control	Stilbestrol	Synovex	Control	Stilbestrol	Synovex	Control	Stilbestrol	Synovex	Control	Stilbestrol	Synovex	Control	Stilbestrol	Synovex
TEST #1 Great Western Sugar Co., Windsor, Colorado	166	60	in: 848.0 out: 1,010.0		in: 843.8 out: 1,036.1	2.70		3.22	53.35		53.01	10.8		8.9	19.76¢		16.48¢
TEST #2 Imperial Valley, Cal. (name of company available upon request)	Stilbestrol: 37 Synovex: 38	72				3.78	3.64		79.57	77.84		10.06	9.73		21.04¢	19.98¢	
TEST #3* Imperial Livestock Supply Co., El Centro, Cal.	Control: 73 Stilbestrol: 26 Synovex: 33	126	in: 610.2 out: 896.4	in: 613.7 out: 940.9	in: 604.1 out: 929.3	2.29	2.60	2.58	47.53	51.89	48.91	9.02	8.67	8.24	20.76¢	19.96¢	18.96¢

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News From Washington



Agricultural Research Service, assisted by the Federal Civil Defense Administration, the Atomic Energy Commission, and the Department of Defense, will hold a series of regional meetings during April and May to **give veterinarians basic information on radiation problems, including measures to protect animals and food against contamination.** This radiological defense course is open to **all veterinarians.** Meetings will be held in the following locations: April 1-3, Room 705, 45 Broadway, New York, N.Y.; April 3-5, Red Cross Building, 8th and Sycamore Sts., Cincinnati, Ohio; April 8-10, Federal Office Building, 911 Walnut St., Kansas City, Kan.; April 10-12, Building T-1114, Fort McPherson, Atlanta, Ga.; April 22-24, Peters Hall Auditorium, School of Veterinary Medicine, University of Minnesota, St. Paul, Minn.; April 24-26, Auditorium, Interior Building, Lloyd Blvd., Portland, Ore.; April 29- May 1, U.S. Post Office and Courthouse, 312 N. Spring St., Los Angeles, Calif.; May 1-3, GSA Building, 300 W. Vickery St., Fort Worth, Texas.

* * * *

The U.S.D.A., on February 21, announced a realignment of ARS functions to give added emphasis to research and development on the utilization of farm products. Utilization Research and Development and Production Research, each with a deputy administrator, are two groups added. Administrative responsibilities of the Services Deputy Administrator for regulatory programs, Dr. M. R. Clarkson, and the Deputy Administrator for experiment stations, E. C. Elting, continue unchanged. Also, the unit formerly termed "branch" now becomes a division, each with a director in charge.

* * * *

Prowers County, Colorado, has been added to those previously reported under federal **quarantine for scabies** (see JOURNAL, Dec. 15, 1956, adv. p. 12; Jan. 15, 1957, adv. p. 10). On February 18, certain areas in Los Animas County were released from quarantine restrictions previously imposed.

* * * *

A committee representing the U. S. Livestock Sanitary Association, serving in an advisory capacity to ARS, conferred with regulatory and research officials of ARS on February 26 relative to budget and program matters. The committee members are Drs. W. L. Bendix (Va.), R. A. Hendershott (N.J.), J. G. Milligan (Ala.), H. U. Garrett (Iowa), and A. P. Schneider (Idaho).

* * * *

New Legislation.—H.R. 4357, introduced by Representative Victor L. Anfuso (D., N.Y.) would provide for **compulsory poultry inspection**, and create in U.S.D.A., as part of the Meat Inspection Branch, a Poultry Inspection Section. S.1128, Senator Humphrey (D., Minn.), also provides for compulsory inspection and would place inspection in the Agricultural Research Service, U.S.D.A. The following senators also sponsor the Humphrey Bill (Chavez, Clark, Douglas, Green, Jackson, Langer, McNamara, Magnuson, Mansfield, Morse, Murray, Neuberger, and Mrs. Smith).

Senator Arthur V. Watkins (R., Utah) introduced S. 1213, a bill to promote the development and use of improved methods for the **humane handling, transporting, and slaughtering of livestock and poultry** in interstate and foreign commerce.

Representative William H. Bates (R., Mass.) introduced H.R. 3516, a bill to authorize Walter Reed Army Institute of Research to award master of science, master of public health, and doctor of science degrees in medicine, dentistry, **veterinary medicine**, and in the biological sciences involved in health services.

Representative Adam C. Powell, Jr. (D., N.Y.) introduced H.R. 5030, a bill which would provide a system of scholarships for college and graduate level study of scientific subjects, to be administered by the Commissioner of Education, in order to increase the supply of scientific and technical manpower (see JOURNAL, Feb. 15, 1957, adv. p. 16 for bills previously reported).



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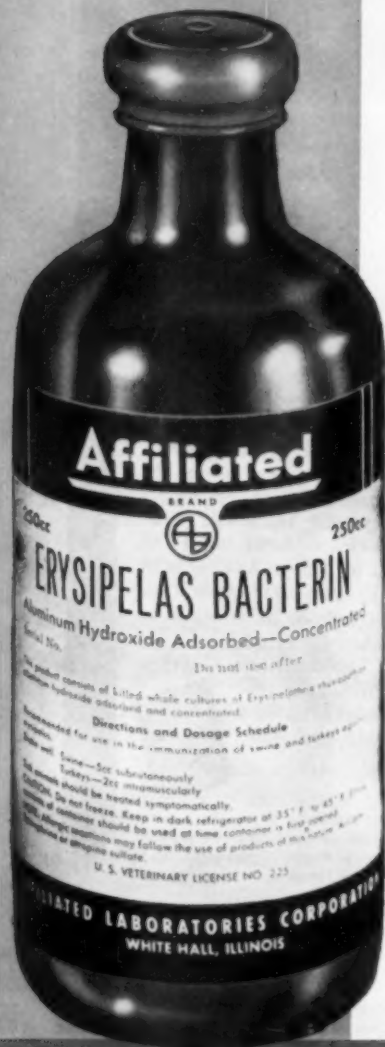
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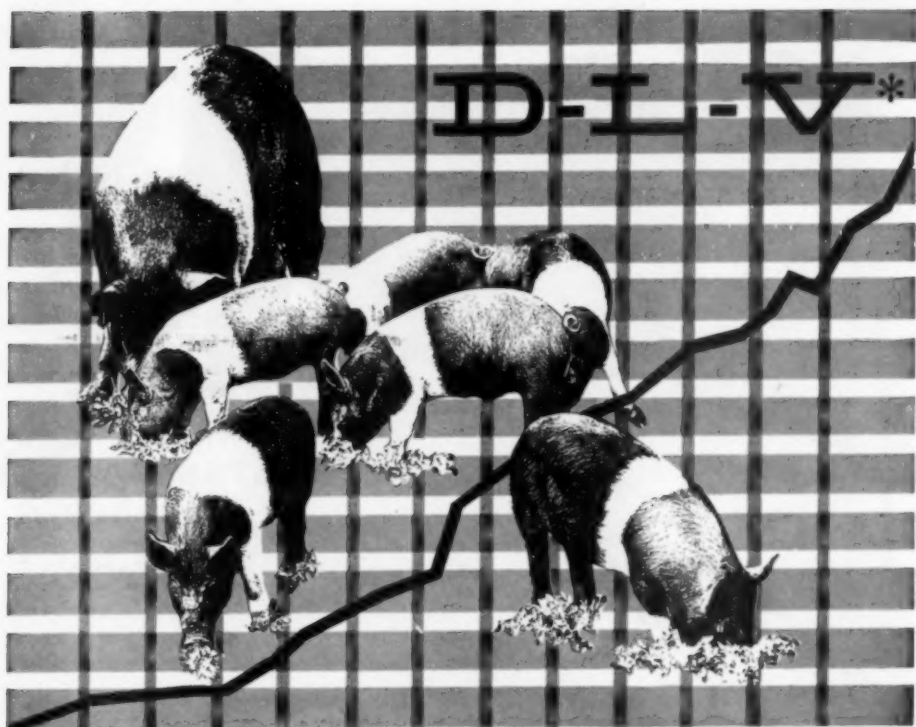
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M-49-56-5

Holstein—Female—1 week of age

DIAGNOSIS: CALF SEPTICEMIA

HISTORY:

Calf penned with other calves near a north door. Five of nine calves developed ecours and septicemia.

SYMPTOMS:

Temperature 100° F., pulse 100 and respiration 60. Animal unable to stand, mouth cold to touch.

TREATMENT:

5 cc. of METICILLIN, 2 Gm. of streptomycin intramuscularly and 2 VARITON Compound boluses were administered

RESULTS:

Calf up and offering to eat 16 hours later. One VARITON Compound bolus given twice a day for two days.

Case K-5-56-6

Canine—Mixed—Male—3 months of age

DIAGNOSIS: DISTEMPER

HISTORY:

From animal shelter.

SYMPTOMS:

Temperature 103.4° F., typical catarrhal distemper symptoms.

TREATMENT:

1 cc. METICILLIN daily for 3 days. Supplemental therapy given the first two days included 15 cc. of antidiarrheal serum and 1 cc. of B-complex.

RESULTS:

Excellent. Catarrhal discharge disappeared at end of the second day. Temperature dropped to normal within 24 hours after the first dose of METICILLIN and appetite returned. Animal dismissed on 4th day of hospitalization.

C-13-56-5

Jersey—Female—2 years of age

DIAGNOSIS: HEMORRHAGIC SEPTICEMIA

HISTORY:

Animal purchased at stock sale 5 days before first examination. Treated with tetracycline intraperitoneally two days previously. Condition improved, but animal relapsed until her condition was more severe than in original state.

SYMPTOMS:

Definite evidence of pneumonia. Temperature 105° F., increased respiration and pulse, animal not eating.

TREATMENT:

One vial (10 cc.) of METICILLIN administered intramuscularly and 1½ gr. of tetracycline administered peritoneally.

RESULTS:


Animal was eating by the following day and made an uneventful recovery.

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JOURNAL

of the American Veterinary Medical Association

Established January, 1877

Chicago 5, Illinois

Vol. 130

March 15, 1957

No. 6

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Myositis (Tying Up) in Race Horses

PAUL MEGINNIS, D.V.M.

Roselle, Illinois

THE HORSE, more than any other domesticated animal, has been bred for muscular development. Because of this fact, and the special types of work performed by the horse, it is often subject to myositis.

The draft horse, until displaced by mechanical power, was one of the major interests of most practitioners, some of whom later gradually shifted their attention to the light breeds of horses used for pleasure and racing. They found that, because of the difference in conformation, temperament, and uses of the heavy and light breeds, some of the noninfectious ailments differed in the two types. Such is apparently the case in certain forms of myositis.

When I started in practice in Iowa, in 1931, the draft horse was still being used in the medium-sized city in which we were located, as well as on most of the farms, and myoglobinuria, a form of myositis commonly known as "azoturia," was still occasionally seen in these horses. In earlier years, this malady had also been called "Monday morning disease" because it so often occurred after the animals had been stabled with little or no exercise on weekends.

Today, many veterinarians diagnose a confusingly similar condition, seen in saddle horses and race horses, as azoturia. Since this disease, especially the nature of the pathological changes, was a controversial subject among veterinarians of former years, it is not surprising that veterinarians dealing with the comparable condition today may be in disagreement. During nearly a century, starting about 1852, many articles dealing with azoturia were published. However, few, if any, articles have been published on the form of myositis which especially affects race horses

and which laymen call "tying up" or "cording up."

Hutyra and Marek¹ mention a condition found in horses used in various types of racing, which they called "race course disease" or "race course illness." Apparently, this disease was different from the myositis which I have seen at race tracks and which is called "tying up." In race course disease, extreme muscular weakness followed the onset and recovery usually took from three to four weeks, whereas in tying up, the horses seem to be normal in a few hours.

Most of the articles on so-called "azoturia" were based on experiences with the heavy-type horse. However, several authors^{2,3} mentioned that light horses were also affected, while others^{4,5} did not mention the breed or type. Steffin⁶ stated that the clinical picture varied with circumstances, environment, locality, feeding customs, breeds, and individuals, also that "no one disease of horses has been the subject of so many theories, theoretical treatments, and hypothetical suggestions as this one."

In typical attacks, the symptoms were acute and seemed to be progressive only if the horse was kept moving. The animal showed distress, nervousness, and sweating. The affected muscles, usually in the lumbar and hip region, swelled but were nonsensitive to palpation. The urine was always more or less coffee-colored; the cause of the discoloration was one of the debated points. While it had been suggested⁶ that the color was due to blood elements in the urine, it seems more probable³ that it was entirely due to degenerative products from the affected muscle. Because of the tendency to paralysis of the bladder, the patient was usually catheterized.

The name "azoturia" has long been challenged as being incorrect³ since the term

Dr. Meginnis is an equine practitioner in Roselle, Ill.

means nitrogen in the urine and only in the latter stages of severe attacks, when there may be an increase in the nitrogenous products because of changes in the kidneys, is this true.⁹ "Paralytic myoglobinuria" would seem to be a more acceptable name for the disease.¹⁰

DIFFERENTIAL DIAGNOSIS

While there is a similarity in the clinical symptoms of paralytic myoglobinuria and tying up, there are four main clinical differences: (1) the season of the year in which the attacks were most likely to occur, (2) the history, (3) the handling of the patient, and (4) the end results.

The draft horse disease was reported to occur less frequently during the summer and one explanation³ for this was the increased accumulation of lactic acid in the system. (An increase from the normal 9 to 12 mg./100 ml. to between 16 and 182 mg./100 ml.). The amount of lactic acid formed following exercise is dependent upon the storage of glycogen in the muscles and this storage was believed³ to reach its lowest point during the summer months. In contrast, tying up occurs just as frequently, at least during a Chicago racing season, in summer months as it does any other time of the year.

In the former disease, usually, the affected horses had not worked for periods of one day to several weeks, the feed had not been reduced, and the animals had been confined with little or no exercise. On the other hand, usually, the racing animal has been in training for some time, has been worked daily, and the quantity and quality of the feed has not been changed.

There is a marked contrast in the method of handling horses after the onset of symptoms in these two conditions. With myoglobinuria, stopping the animal when the first signs of stiffness appeared was imperative. Since walking the affected horse even a short distance could mean prostration and death, temporary shelters were sometimes provided, if needed, whenever the horse happened to be. Regardless of my treatment, which was varied, all of my patients that went down died. On the other hand, many Thoroughbreds and Standardbreds that have "tied up" can be walked until they appear normal. I never recommend this procedure but have seen it done on several occasions in the past 11 years.

PROGNOSIS

While the mortality rate in myoglobinuria was relatively high, in tying up it is practically nil. This probably accounts for so little having been written about a condition which is frequently seen at race tracks.

In my opinion, treatment for tying up has never been a problem; the results do not seem to differ regardless of the drugs used. Products used have included glucose, glucose-saline, magnesium sulfate-chloral hydrate, thiamine, neoprontosil, and nembutal.⁶ I often use the latter two, nembutal for relaxing the animal and neoprontosil for its possible detoxifying action—admittedly empirical therapy.

I prefer to place the affected horse in a box stall and direct the groom to rub the hair dry and then to put on a light or a heavy blanket, depending on the atmospheric temperature. The nembutal is administered very slowly until the dilated nostrils relax.

I have only once found it necessary to catheterize an affected horse. This gelding had been walked until locomotion was practically nil, with all skeletal muscles in an extreme state of rigidity. After viewing the coffee-colored urine, I wondered if this was paralytic myoglobinuria. Doubt was removed by the rapid recovery.

Veterinarians do not agree as to the presence or absence of pain in the affected muscles when symptoms of tying up are present. The horse appears anxious, the nostrils are dilated, and there is moderate-to-profuse sweating which could be attributed to pain.

After observing affected horses being rubbed dry in their stalls, it is my opinion that they show less restlessness, which could indicate pain, than many normal Thoroughbreds do while being groomed. Many of the latter show considerable sensitivity when palpated over the lumbar and sacral regions.

Attacks of "tying up" do recur, especially in younger animals of an occasional stable in a given year. This can not be fully explained. It could be due to faults in the feeding and training program. However, neither a reduction in the daily grain consumption, the elimination of legumes, the addition of a mineral supplement, nor giving a series of calcium or thiamine injections seems always to prevent attacks.

The cause of "tying up" should be scientifically studied. Until the physiological chemists can determine the changed chemistry in the metabolism of normal and "tying up" horses, prevention and treatment will be merely guess work.

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Causes of Myoglobinuria in Man

Myoglobinuria, a condition in which muscle pigment (myohemoglobin) is excreted in the urine, may be caused by crushed muscles, electric shock, infarction of muscle, and rarely by carbon monoxide poisoning. It may also be associated with muscular dystrophy, dermatomyositis, and it has occurred in persons after eating certain fish.

About 21 cases of paroxysmal idiopathic myoglobinuria have also been described. It is improbable that myoglobin escaped from muscle cells in the absence of necrosis. There is a striking similarity between this disease in man and one in horses which occurs when they are exercised after a period of rest on a high carbohydrate ration. Raised levels of lactic acid in the blood during these attacks suggested that sudden liberation of lactic acid without normal dilation of capillaries might have led to muscle necrosis. In man, raised levels of lactic acid have not been detected; however, the condition may be a manifestation of abnormal chemistry in the muscle cells.—*Brit. Med. J.*, Jan. 19, 1957.

Acid Firing of Sprained Tendons

A report on the results of treating sprained tendons in horses, by counter-irritation with acid, indicates that of the first 16 horses treated (May, 1952, to June, 1955), 12 were sound. Of the remaining 4, 1 was sound when sold shortly after treatment; 1 developed a separate lameness in the foot; 1, with a severe sprain, recovered but not sufficiently for racing; and 1 was unsatisfactory because of poor conformation.

Before treatment, the horse should be confined to a small enclosure for six to eight weeks to prevent galloping while the initial inflammation recedes. After treatment, the animal should be exercised to prevent adhesions but not allowed to trot or gallop too soon. One advantage of acid over the "hot iron" or blister is that the latter methods cause pain and disuse of the limb, which allows adhesions to develop.

To "fire" the affected tendon, a "thin adhesive plaster with an outer glossy surface which will resist the action of sulfuric acid concentrate for 30 minutes" is used. A strip about 4 inches wide with holes $\frac{3}{8}$ inch in diameter, spaced $\frac{3}{4}$ inch apart from center to center, is placed over the tendon. A piece of felt, wider than the holes, attached to a holder is dipped into the acid, then applied lightly to each spot to reduce sensation without causing discomfort. The procedure is then repeated twice, more deliberately and with more pressure. Four days after treatment, an ointment containing sodium bicarbonate (25%) is applied over the tendon. This can also be applied before treatment to prevent unintentional acid burns.—*E. S. W. Peatt in Vet. Rec.*, Dec. 22, 1956.

More on Acid Firing.—A correspondent, having used acid firing for 25 years, asks why a simple operation is made so laborious and complicated. He requires only acid, several corks grooved on the end with a razor blade, rubber gloves, and reasonable care. Without restraint, except for holding up the opposite limb, he lightly touches each spot on the clipped limb the first time, then repeats with more pressure.—*Vet. Rec.*, Jan. 12, 1957.

By using a laryngoscope to determine the length of the human vocal cords, experts can classify the natural range of the human voice.—*Sci. News Letter*, Jan. 26, 1957.

Drug Administration to Racing Animals

CHARLES E. MORGAN

Jamaica, New York

THE EARLIEST known report of efforts to affect the speed of racing animals refers to the use in ancient Rome of hydromel, a mixture of honey and water, to increase the endurance of horses in chariot races. If one gives free rein to his fancy, it is easy to imagine that even in earlier times, probably since horses first came to be used as beasts of burden, one animal may have been pitted against another and pride of ownership, or some more mercenary reason, could have fostered the use of nostrums, perhaps obtained from the medicine man, in the hope of adding to the horses' natural ability.

DETECTION OF DRUGS

As knowledge of *materia medica* increased through the centuries, so the pernicious practice of giving drugs to race horses expanded and, by the first decade of this century, it had become sufficiently widespread to lead the authorities to do something about it. In 1910, an Austrian chemist, a Dr. Fränkel, was successful in detecting drugs in the saliva of horses, and his methods were soon adopted in England, France, and other European countries. In the United States, where wagering on races was contrary to law in nearly all states, laboratory procedures were not employed for the prevention of the evil until *pari mutuel* betting was legalized in the early 1930's. Today, in all of the 25 states which have legal racing, the sport is regulated by state racing commissions, and every commission uses a chemical laboratory for the detection of illegal drug administration.

Drugs that have been detected by the laboratories are many and varied; more than 36 different ones have been reported. Natural alkaloids like morphine and its derivative, heroin, strychnine, ephedrine, caffeine, and cocaine; synthetic bases such as the sympathomimetic amines, amphetamine, methamphetamine, and phenylpropanolamine; the respiratory and heart stimulants, nikethamide and pentylenetetrazol;

the antihistaminic drug, methapyrilene; sedatives like atropine and barbiturates; local anesthetics of the nature of procaine; and even the cinchona alkaloids, quinine and cinchonidine, have all been detected and their hopeful users punished. In recent years, the most popular drugs have been amphetamine, caffeine, and procaine; several other drugs are encountered each year. The annual total number of cases of drugging in this country is 40 or 50, and this exemplifies the saying that "hope springs eternal" and the fact that measures for control of the evil can not be relaxed.

Drugs have been administered to racing animals in a wide variety of ways, both orally and parenterally. They have been given by mouth mixed with feed, in the form of powders, tablets and capsules, and in solution, as drenches and with dose syringes. Most of the usual routes of parenteral administration have been employed—subcutaneous, intradermal, intramuscular, and intravenous—with the instruments ranging from the usual syringes and needles to syrettes and needles attached by a rubber tube to a rubber bulb. Even a kind of gun has been used with which a syringe was propelled by means of a spring. The animal in that instance was a Whippet, and the object was to defeat state supervision of the kennel in which the dogs were held for a period of time before the race. Irritants have been applied by rectum, presumably on the "chestnut-burr-under-the-tail" theory, and probably prompted by the old show ring custom of using something like ginger to make the horse carry his tail erect.

COLLECTION OF SAMPLES

The procedures for the chemical detection of drugs begin with the collection of proper samples. In this country, the mediums of choice are saliva and urine. In Europe, sweat is more often collected than urine and, in a few countries, blood samples are taken. Sweat is one of the excretory channels through which drugs are eliminated but, since it is a superficial

Mr. Morgan is with the New York State Racing Commission Laboratory, Jamaica.

secretion, it is usually highly contaminated. Blood is not satisfactory because it contains the drugs for a relatively short period after administration and because its routine collection involves the possibility of infections being blamed, rightly or not, on the operative procedure employed. Feces is of very little value because it is not an eliminatory channel for most drugs and because the relatively enormous ratio of impurities to such drugs, as may be partly excreted by that route, complicates the analytical problem. Rectal swabbings may be made, however, in cases where the use of irritants is suspected.

Urine is an excellent medium for drug detection because the kidneys are one of the principal eliminatory channels for drugs and because the bladder provides a natural reservoir for the accumulation of urine after it has been secreted by the kidneys. Saliva also has certain advantages. It is a relatively pure secretion and, since its source is the blood, it will contain drugs regardless of the mode of administration. Obviously, it will also contain drugs left as residues from oral administration. Ordinarily, if a drug is given shortly before a race, it will be found in the saliva but not necessarily in the urine; a little later, it may be present in both saliva and urine and, after a considerable time, it will usually be found only in the urine. Naturally, the method of administration and the size of the dose, as well as the nature of the drug, have an important bearing on its excretion. Needless to say, both types of samples must be collected to provide the best opportunity for the detection of drugs.

Since there are, to my knowledge, no satisfactory analytical methods for the detection of drugs which can be applied before a race and completed before the race begins, samples are always collected in this country after the race is over. This also makes it unnecessary to collect samples from all of the animals entered in a race. Since the principal intent of the "dopester" is to make the animal win, samples are routinely collected only from those that finish "in the money." Drugs have been employed to prevent winning, so samples are also collected from animals that run badly out of form, as well as from those which are suspect for any reason, winning or not.

Sample collection is always performed or supervised by a veterinarian. The horse to be sampled is led directly from the winner's circle, under official observation, to the place where the saliva samples are collected. In New York, the saliva collection procedure is to permit the horse to chew on gauze pads, saturated with 1 per cent acetic acid and held in the jaws of long, especially designed forceps. One pad is used in the left side of the mouth and another in the right side, the horse chewing on each for two minutes, and the drippings caught in a tray held underneath the mouth by an assistant. Then, a third dry pad is used to wipe out the mouth, under the tongue, and between the lips and the upper and lower incisors. The contents of the tray and the three gauze pads are transferred to a sample jar, properly identified and sealed, and sent to the laboratory. After the saliva sample is collected, the animal is taken to its own barn or to a central collecting area and the customary "cooling-out" procedure is allowed under strict, official supervision. Ordinarily, urine will be voided when the horse is put in the stall after cooling-out, and a state inspector collects the sample at that time, using a sample jar in a holder at the end of a long handle. Ninety per cent of the samples are collected within an hour and a half of the end of the race and over 99 per cent within three hours, which is the length of time inspectors are required to stay with the horses, unless it is specifically extended by the stewards in case of suspicion.

METHODS OF TESTING

The methods used to analyze the samples are the same, in principle, in all laboratories. The problem is first to isolate any drugs which may be present from the relatively enormous amounts of extraneous material, of which water is the most voluminous and the easiest to remove. After preparation of the samples, such as expressing the saliva solution from the gauze pads, they are concentrated by evaporation under vacuum or by direct extraction with a suitable solvent. The solutions or residues thus obtained are further purified by alternate filtration and treatment with chemicals which precipitate impurities but not drugs, or by washing the solutions with solvents which remove drugs but not impurities. A semipurified residue or solution is the result in either case. The next step usually is to extract water solutions containing the partially purified drugs, with immiscible solvents, such as ether, chloroform, ethyl acetate, and mixtures of such solvents, at appro-

prate pH values in such a way as to separate the drugs from the remaining impurities and to group them into two or more classes. After removal of the solvents by evaporation, the residues are dissolved in small amounts of water and tiny portions of the solutions treated with reagents which will form microscopic crystals or produce colors if drugs are present. The solutions may initially, or after re-extraction from the reagent mixtures, be examined with a spectrophotometer to measure their absorption of ultraviolet radiation. Many, but not all, drugs absorb ultraviolet in a typical way. The crystals indicate the presence of drugs and also serve to identify them. The crystals vary in shape, color, and habit of growth in almost infinite variety, depending upon the drug and reagent which produce them and the conditions under which they form. Color tests and ultraviolet absorption are an aid in confirming the identity of drugs and are routinely employed by most laboratories. Another comparatively new technique, paper chromatography, is also being employed to supplement the other tests. A portion of the solution is placed near one end of a strip of paper and the end of the strip is kept wet with a suitable solvent. The drug is picked up by the solvent, carried along the paper, redeposited, impurities remaining behind or being deposited in a different place. Application of a suitable locating agent, one which causes the drug spot to become colored, enables the distance traveled to be measured; the ratio between that distance and the longer one traveled by the solvent itself is characteristic. This procedure is particularly useful for the separation of closely related drugs, such as caffeine and theobromine. The tests are extremely sensitive; the amount of drug which can be detected and satisfactorily identified in a standard sample may be as little as 10 or 20 μg ($\mu\text{g} = 0.000,015 \text{ gr.}$) and, with most drugs, a few hundred micrograms is readily detectable.

All cases of illegal administration of drugs to race horses may not be detected. As already mentioned, samples are not taken from all the horses in a race, so if one is drugged but neither places nor runs badly out of form, the laboratory will not get a sample. By the same token, the dopester will not benefit from his chicanery. Also, the laboratory does not always receive adequate samples of saliva and urine since the horses may not be cooperative. A third reason is that the samples may be collected at a time when insufficient drug is present in them for detection. Sample collection is necessarily a routine matter since the collectors can not time it with knowledge of what drug was used and when and how it was given. However, what has been said applies to the small minority of cases and the majority of dishonest horsemen will be detected.

RULES GOVERNING DRUG ADMINISTRATION

The rules of racing, without exception, forbid the administration of drugs to an animal before a race. They vary considerably in wording in various jurisdictions, of course, but their purport is the same. In some states, the rules forbid the administration of any drug to a horse, with provisos designed to protect the health of the animal if drug administration is necessary for therapeutic reasons; such provisos require that the stewards be informed of the circumstances and authorize them to "scratch" the horse if they deem it advisable. The pertinent rule of the New York State Racing Commission provides for punishment if "... any drug, stimulant or narcotic has been administered or attempted to be administered, internally or externally, to a horse before a race, which is of such a character as could affect the racing condition of the horse in such a race. . . ." Another part of the same rule obligates the trainer, groom, and others in charge or care of a horse to protect it and guard it against drug administration, with provision for punishment for failure to do so. Another rule prohibits possession within the grounds of a racing association of hypodermic syringes and needles and similar devices without written permission. Still another rule provides that all bottles and other containers be plainly labeled with a statement of contents, including the name of each active ingredient, but excepts containers bearing prescription labels with pharmacists' numbers, names, and addresses and the names of the prescribing veterinarians. The rule of the New York State Harness Racing Commission states, in part, "No person shall, or attempt to, or shall conspire with another or others to . . . stimulate or depress a horse through the administration of any drug, medicant, stimulant, depressant, hypnotic or narcotic." Other rules make the trainer responsible for the condition of his horses and prohibit possession of hypodermic equipment without written permission. Punishment for violation of the rules includes disqualification of the horse and forfeiture of the purse and suspension or revocation of the licenses of guilty parties.

THE ROLE OF THE VETERINARIAN

The role of the veterinarian at the race track is an important one. His functions

depend, of course, on the nature of his connection with racing. He may be a practicing veterinarian, caring for the health and well-being of the animals in a purely private capacity. His obligations to the owners and trainers must include a knowledge of the rules against the illegal administration of drugs and the taking of adequate precautions against the use of his prescriptions in any way which might cause the rules to be violated.

He may be an official veterinarian charged with the prerace examination of animals. In addition to the customary tests for fitness to race, he should keep in mind the possibility that any of the animals he is examining may have been drugged and should be on the alert for such evidence. Respiration and pulse should be recorded, the eyes should be carefully examined, and any evidence of the use of a hypodermic should be investigated. A knowledge of the normal condition of the legs of particular horses may cause him to suspect the use of local anesthetics. If his duties are the collection or supervision of the collection of samples, he will naturally be on the alert for any evidence of drug administration disclosed while he is observing the behavior of the horses in the paddock, during the race, and while the samples are being collected. It goes without saying that he will make sure that adequate samples are properly collected and properly identified.

The official veterinarians should serve as advisors to the chemists in such matters as the introduction of new drugs and their pharmacology, including metabolism, since they will ordinarily have more immediate access to such information through the publications of their societies, trade publications, and their daily contacts with horsemen. The services of veterinarians are indispensable in experimental work involving the administration of drugs to animals and the collection of samples at proper intervals. The official veterinarians must, of course, be thoroughly familiar with race horses, their handling and stable management, and be well versed in race track parlance.

COMMENTS

Mention should be made of the existence of the Association of Official Racing Chemists, an international organization with members in almost all of the racing

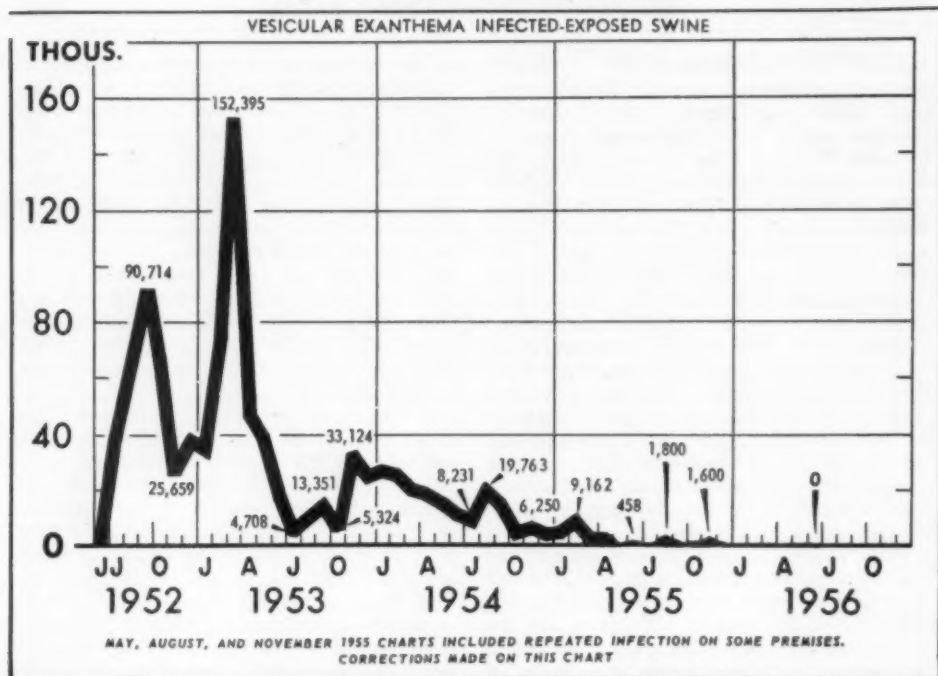
states in this country and in 18 other countries on all of the continents. Its prime purpose is the exchange of information among its members about methods of analysis, drugs detected, new drugs, and the progress and results of research. It sets standards for admission to membership and takes measures to insure the continued competence of its members. The association and its individual members serve as advisors to racing authorities on matters within their scope and, in general, work to insure that the practice of racing chemistry everywhere fulfills its purpose in the racing world.

One last remark seems pertinent. The great majority of horsemen, like the great majority of all people, are honest. If it were not for the small minority of dishonest horsemen, none of this would have to be done. In these days, the state of New York, and all states where racing is legal, has an obligation to the people who attend races to protect them from the small minority of crooks who feel that perhaps a prescription is better than good muscles or a good heart in a race horse. It is the job of the chemist and the veterinarian to protect the public which makes racing possible, the racing commission which represents the public, the racing association that conducts the races and, finally, the horseman himself—the honest horseman from the dishonest horseman. That is our job.

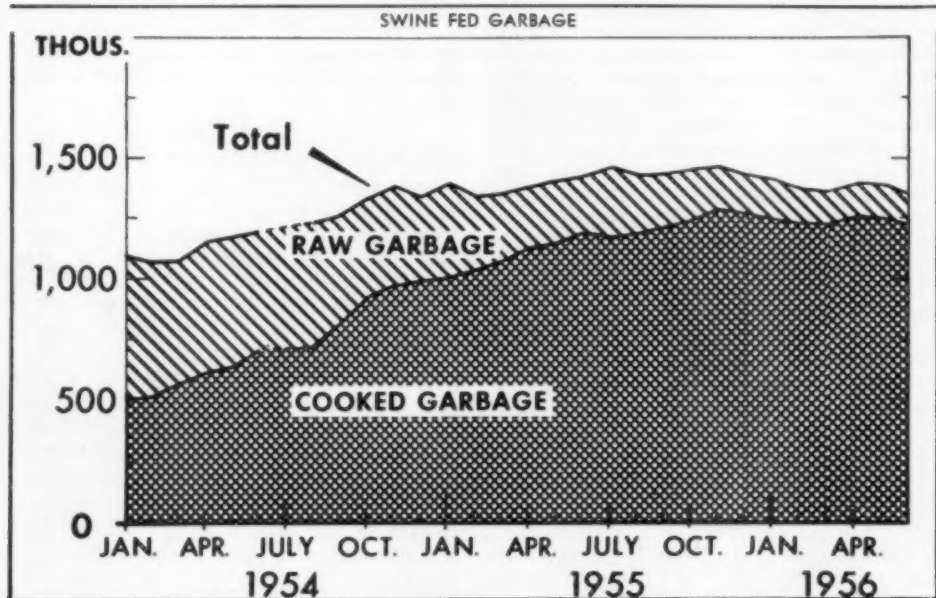
Vibrio Fetus Infection in Man

An employee of a meat-packing plant, working on beef, had an infection due to *Brucella abortus* and later, in the same year, an illness due to *Vibrio fetus*; the organism was isolated from his blood. The clinical features of the two infections were similar. This infection is rare in man but, in France, *V. fetus* was isolated from the blood of three women, two of whom aborted. However, hundreds of meat-packing employees suspected of having brucellosis have been examined at the University of Minnesota hospital without vibrios having previously been isolated. In several instances of vibriosis in man, therapy with antibiotics, preferably chloramphenicol and tetracycline, has been attended by prompt recovery.—W. W. Spink, M.D., in *J.A.M.A.*, Jan. 19, 1957.

Progress of Vesicular Exanthema Eradication



This graph depicts the success attained by federal, state, and local cooperation in the eradication of vesicular exanthema of swine. The disease, confined for 20 years to California where it was first recognized in 1932, is now practically eradicated, its only appearance in 1956 being in New Jersey.



The extent of garbage cooking in the United States since the adoption of garbage-feeding control regulations by most of the states is shown in this chart. At present, 90 per cent of garbage fed to swine is cooked, and monthly inspections on 90 to 100 per cent of garbage-feeding establishments are conducted in 39 states. This program is also essential if hog cholera is to be eradicated.

Pneumoperitoneum in the Dog

WILLIAM D. CARLSON, D.V.M., M.S.

Fort Collins, Colorado

INTEREST IN pneumoperitoneum resulted from the difficulties encountered in the diagnosis of obscure abdominal changes and conditions with accepted diagnostic measures. While seeking a better means of visualizing abdominal viscera radiographically, pneumoperitoneum, injection of a gas into the peritoneal cavity, was investigated as a contrast medium. This study was undertaken to determine if pneumoperitoneum is sufficiently safe, practical, and simple for routine use in veterinary medicine. It was used frequently in human medicine^{1,4,11,19,20,22,25} until the last decade when its popularity declined.¹³ In veterinary medicine, it has been used only sparingly,^{7,21} with the work of Schnelle being considered fundamental.⁹

MATERIALS AND METHODS

The dogs used in this study differed in age, breed, and sex.

Preparation for the study included withholding food and water for a period of about 12 hours prior to radiography. In addition, 1 oz. of castor oil was given to empty the gastrointestinal tract. Morphine ($\frac{1}{4}$ gr./10 lb.) and atropine (1/150 gr.) were given about 45 minutes before the procedure.

The injection site, $\frac{1}{2}$ inch lateral to the umbilicus (fig. 1), was considered advisable due to a normal pad of fat within the peritoneal cavity on the midline of the ventral abdomen. A 2-inch, 18-gauge needle was directed anterodorsally at an angle of about 45 degrees, inserted to its hub, and held adjacent to the ventral abdominal wall. Before injection of any gas, aspiration was performed to insure that no vessel or abdominal organ had been punctured. The injection apparatus was then attached to the needle and the gas was injected.

The injection apparatus (fig. 2) consisted of a 20- to 50-cc. glass syringe attached to an Ayer's three-way valve. One opening of the valve was attached to a 2-ft. section of rubber infusion tubing fitted with a Luer adapter.

The gases used were atmospheric air and oxygen. One group of dogs was given air, the other group was given oxygen.

From the School of Veterinary Medicine, Colorado A. & M. College, Fort Collins. Taken from Part I of a thesis submitted as partial fulfillment of the requirements for a M.S. degree at Colorado A. & M. College. Dr. Carlson is presently taking graduate training in radiology at the University of Colorado Medical Center, Denver.

Presented before the Section on Small Animals, Ninety-Third Annual Meeting, American Veterinary Medical Association, San Antonio, Texas, Oct. 15-18, 1956.



Fig. 1—Injection site for pneumoperitoneum.

The apparatus used to inject oxygen was the same as for air, with the addition of two bottles in series to hold the oxygen (fig. 3). The first bottle was filled with water and the second one was empty. A tube from a tank of oxygen was attached to the first bottle. The gas replaced the water from the first bottle into the second bottle. The oxygen



Fig. 2 (Top)—Gas injection apparatus.

Fig. 3 (Bottom)—Gas injection apparatus with oxygen storage bottles and oxygen tank in place.

TABLE 1—A Comparison of Gas Dosage with Weight and Height of the Dogs

Dog (No.)	Intraperitoneal gas dosage (cc.)	Weight of dog (lb.)	Height of dog (in.)
4	800	21	15
5	780	15	14
6	700	23	13
7	700	16	17
8	700	20	16
9	700	15	13
10	900	24	15
11	600	18	14
12	700	18	15
13	400	14	13

in the first bottle was now available for injection by adjusting the trivalve on the injection apparatus.

The amount of gas required to outline the liver and kidneys and still remain within safe limits for the animal was studied. The injection of gas was done under direct fluoroscopic visualization with the dog in a standing position and the fluoroscopic

screen against the side of the dog's abdomen. Gas was injected until both kidneys were outlined or until back-pressure could be detected on the syringe. The dose of gas varied with each dog and there was no correlation between the size or weight of the dog and the amount of gas required (table 1).

The positions used were dorsoventrad with a vertical x-ray beam (fig. 4), ventrodorsad erect position with a horizontal x-ray beam (fig. 5), lateral erect position with a horizontal x-ray beam (fig. 6), and a standing lateral position with a horizontal x-ray beam (fig. 7).

Radiographs were taken, using a constant machine setting of 75 kv.p., 15 ma. with the time as the only variable. Anode film distance was 30 inches. An eight-to-one stationary grid was used on all films.

After each examination, a second abdominal puncture was made on the opposite side of the original puncture and the gas was withdrawn, using the injection apparatus.

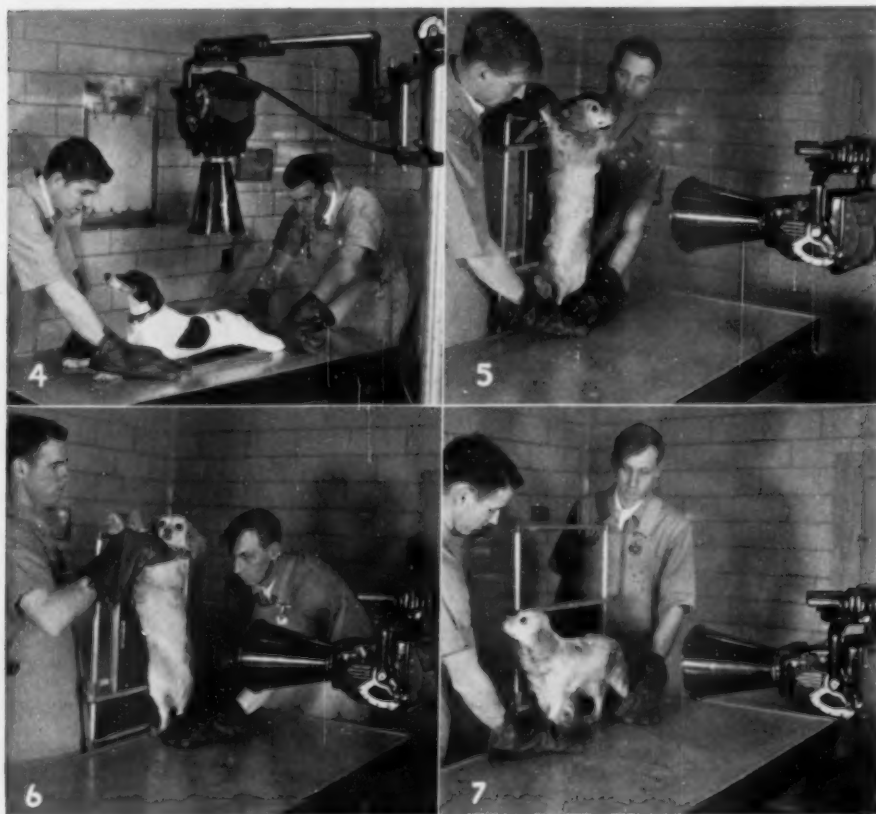


Fig. 4-7—Dog in the ventrodorsad position (4); ventrodorsad erect position (5); lateral erect position (6); standing lateral position (7).

TABLE 2—Visualization of the Kidneys and the Lobes of the Liver of a Dog Using Plain Film Radiography and Pneumoperitoneum

[illegible]

x x x x x	1=Right lateral lobe of the liver; 2=right	of the liver; 7=anterior pole right kidney;
x x x x x	medial lobe of the liver; 3=left lateral lobe	8=posterior pole right kidney; 9=anterior
1 2 3 4 5	of the liver; 4=left medial lobe of liver;	pole left kidney; 10=posterior pole left
6 7 8 9 10	5=caudate lobe of liver; 6=quadrate lobe	kidney.

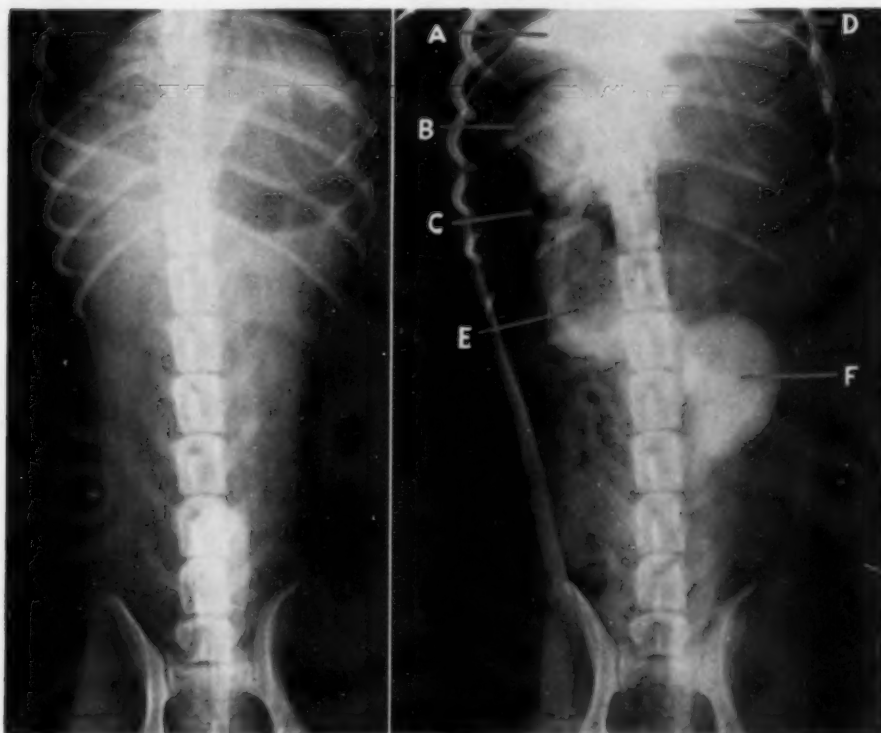


Fig. 8—Radiographs of the abdomen of a dog in the ventrodorsal position. Plain film (left); pneumoperitoneum (right)—(A) right medial lobe of the liver, (B) right lateral lobe of the liver, (C) caudate lobe of the liver, (D) left lateral lobe of the liver, (E) right kidney, (F) left kidney.

The usefulness of the method was determined by comparing films from the pneumoperitoneum technique with plain films of the same subject. The criterion for evaluation was limited to identification of the six lobes of the liver²⁷ and the two poles of each kidney.

The safety was determined by taking the pulse and respiration before and during the procedure and by observation of the animals for untoward effects during and after pneumoperitoneum.

At the termination of the study, euthanasia was performed and a routine necropsy was made.

RESULTS

The preparation of the patient, the injection procedure, and the x-ray technical factors proved satisfactory and without hazard. Air and oxygen were used with equal results.

In determining the usefulness of the technique, the series of films taken on a single animal selected at random are presented for comparison (fig. 8-11). Tabulations for each dog are combined from all

four positions (table 2). Four of the six lobes of the liver, the right lateral, right medial, caudal, and left lateral, were identified in all dogs studied. In addition, the left medial lobe was also identified in 2 dogs. The quadrate lobe of the liver was never positively identified. In plain film studies on the same dogs, the left lateral lobe of the liver was identified in 7 of the 10 animals. No other lobe was positively identified.

By using composite results from all four positions, the entire right and left kidneys were visualized in all animals with pneumoperitoneum (table 2). In plain film studies, the right kidney was identified in 2 and the left kidney in 4 of the 10 animals.

DISCUSSION

The injection technique was simple and required no expensive special equipment. The gases used, air and oxygen, are avail-

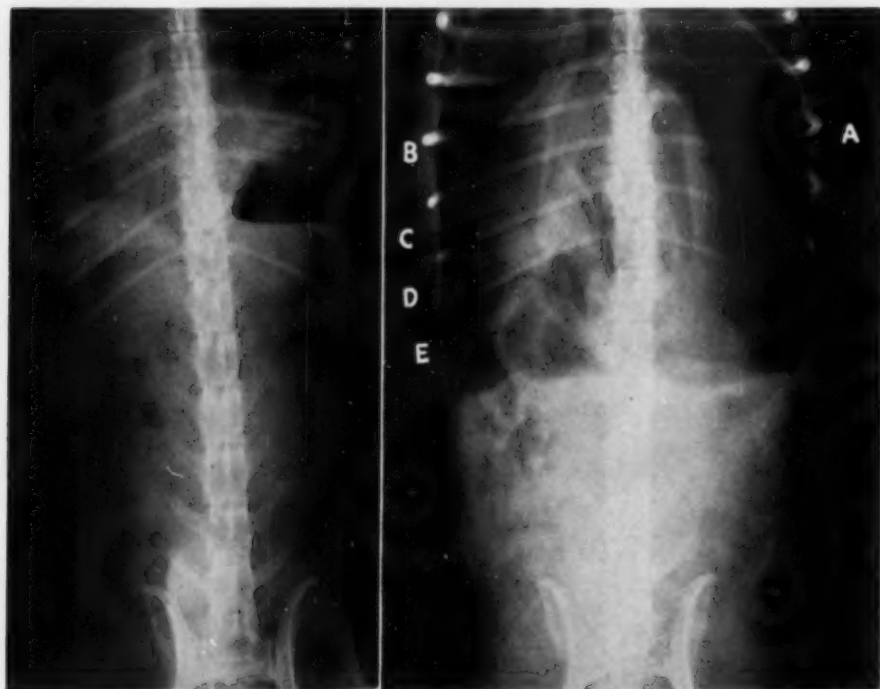


Fig. 9—Radiographs of the abdomen of a dog in the ventrodorsal erect position. Plain film (left); pneumoperitoneum (right)—(A) left lateral lobe of the liver, (B) right medial lobe of the liver, (C) right lateral lobe of the liver, (D) caudate lobe of the liver, (E) right kidney.

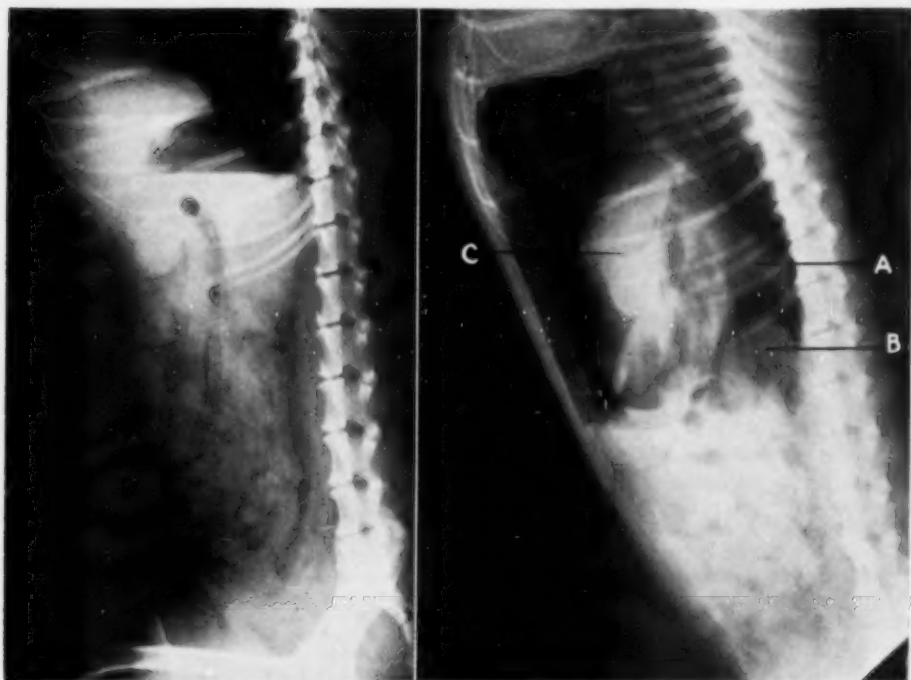


Fig. 10—Radiographs of the abdomen of a dog in the lateral erect position. Plain film (left); pneumoperitoneum (right)—(A) caudate lobe of the liver, (B) right kidney, (C) liver.

able to veterinarians. Unfortunately, a dosage schedule could not be worked out from this study. The amount of gas used was governed by the size of the peritoneal cavities inflated, which varied considerably. Inflation during fluoroscopy was considered the most practical means of regulating the dose.

Pneumoperitoneum proved to be a means of identifying different lobes of the liver and visualizing all the margins of the liver, except that on the immediate posterior surface. Any abnormal protuberance could be located and possibly identified. Both kidneys and the areas of the adrenals were well outlined. Although other struc-

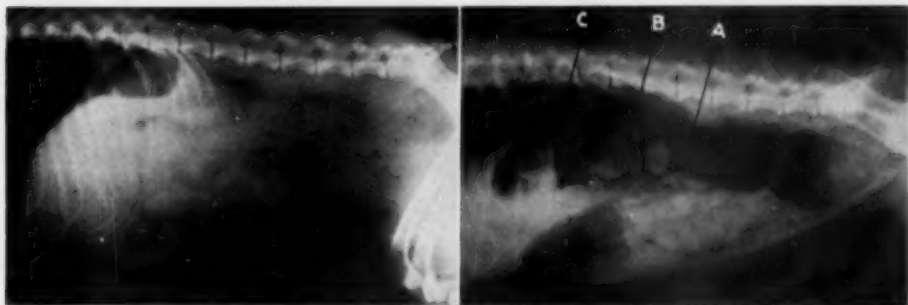


Fig. 11—Radiographs of the abdomen of a dog in the standing lateral position. Plain film (left); pneumoperitoneum (right)—(A) left kidney, (B) right kidney, (C) caudate lobe of the liver.

tures within the abdomen were not studied extensively, this technique might be used to study almost any organ in the abdominal cavity. This could be accomplished by positioning the animal so that the part to be examined would be uppermost and outlined by the gaseous contrast medium in the peritoneal cavity. Some of the structures, both normal and pathological, that have been studied, using pneumoperitoneum, in the human medical field include the liver,^{3,12,14-16,25} the kidney,³ the female pelvic viscera,^{8,19,22,23} the diaphragm and subdiaphragmatic space,^{5,6,14,26,28} the spleen,^{2,9,14,15,24,25} the retroperitoneal area,²⁰ the gallbladder,¹ the pancreas,^{3,15} the inferior vena cava,²⁷ and the metastatic tumor masses.¹⁰

Further, any of the existing contrast mediums for the different abdominal viscera could be combined with pneumoperitoneum with rewarding results.

The main objection to pneumoperitoneum in studies in man were the insertion of the injection needle, the apprehension during inflation, the discomfort and sometimes pain after injection and, finally, the second puncture to deflate the abdomen. Human patients were very hesitant to submit to the technique. The animals, without question, felt some discomfort and pain associated with pneumoperitoneum; however, moderate sedation prevented marked distress during the procedure. Further, when the animals recovered from the effects of the sedation, there was no evidence of pain.

CONCLUSION

The potential diagnostic value and safety of pneumoperitoneum in animals should far outweigh any transient discomfort associated with the procedure. This technique promises to be a valuable tool which should be used more widely in veterinary medicine.

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Prenatal Diagnosis of Sex in Cattle.—

Since the sex of a human fetus can be determined from cells in the amniotic fluid, similar studies were made on bovine fetuses 6, 8, and 16 weeks old, and on tissues taken from male and female calves after birth. These cells do not have the clear sex differences (in chromocenters) found in the human species nor were definite sex differences found in epithelial cells taken from newborn lambs or old sheep.—*Nature*, Dec. 22, 1956.

Fertility of Electroejaculated Semen.—

Semen obtained electrically from bulls was found not to be injured by this method of collection. Actually, 68 per cent of 2,923 cows inseminated with such semen were

impregnated at the first insemination, compared with 65 per cent of 1,218 inseminated by semen collected normally under otherwise similar conditions. The increase was interesting but "not significant."—*Vet. Rec.*, Dec. 15, 1956.

Age of Gilts at Puberty

To reproduce at 1 year of age, gilts must be bred when 8 months old; the more estrous periods they have experienced, the more ova and the larger litter they will produce. Of 515 gilts studied in four years, at the University of Wisconsin, 36 showed no genital abnormalities when slaughtered because they had not reached puberty at 250 to 300 days of age. In two of the years, the age of puberty for inbred gilts was 227.7 days and 244 days, while that of line-crossed gilts was from 7 to 50 days (av. 34 days) less. The rate of growth apparently is a factor since the larger the gilts at 5 months of age, the sooner they developed estrus.—*J. Anim. Sci.*, Nov., 1956.

An Ether Box Made from an Aquarium

The ether box shown (fig. 1) is an ordinary aquarium with glass sides and bottom, and steel supports. The top is made from a



Fig. 1—A cat in the ether box ready to be anesthetized.

piece of $\frac{1}{4}$ -inch plywood. The dimensions are 10 by 10 by 24 inches.

The animal to be anesthetized is placed in the box (fig. 1). Ether is poured in at one end and the plywood top is secured in place with canvas straps. The animal

usually begins to drool, becomes incoordinated, and goes to sleep in five to ten minutes (fig. 2). I have never encountered any difficulties with an animal struggling to get out of the box. Unobstructed observation of the subject is possible because of



Fig. 2—The cat is anesthetized. This requires five to ten minutes.

the glass sides. As soon as relaxation is complete, the animal is removed and the operation or treatment is started. If more prolonged anesthesia is required, it is maintained with an ether cone.—*Wilton E. Blake, D.V.M., Tampa, Fla.*

Clinical Data

Efficacy of Piperazine Citrate in Removing Worms from the Alimentary Canal of Cattle

LEONARD E. SWANSON, D.V.M.; WILLIAM M. STONE, M.S.; A. E. WADE, M.S.P.

Gainesville, Florida

PIPERAZINE SALTS have been subjected to numerous critical anthelmintic tests in the last few years but, with the exception of the work on ascarids in cattle,¹ there have been no critical anthelmintic tests reported on gastrointestinal parasites of the bovine species. Because of the demonstrated anthelmintic activity against gastrointestinal parasites of other hosts,²⁻¹⁰ it was considered advisable to conduct critical experiments with this drug in cattle.

MATERIALS AND METHODS

The piperazine citrate solution used contained the equivalent of 400 mg. of piperazine hexahydrate per cubic centimeter.

The calves used were in poor condition, showing general signs of parasitism. They were not fasted before treatment and were maintained in individual, concrete-floored pens prior to treatment and until time of necropsy. A single oral dose of piperazine citrate solution equivalent to 7.1 Gm./100 lb. of anhydrous piperazine per 100 lb. of body weight was administered to each of 5 calves and twice that dose (14.2 Gm./100 lb.) to 5 other calves. The diet consisted of 16 per cent dairy ration, citrus pulp, and limited amounts of alfalfa hay.

The total feces passed in each 24-hour period following treatment were collected, thoroughly mixed, weighed, and ten samples of 10 Gm. each were taken. Each sample was then washed on a 100-mesh screen, and the worms retained by the screen were counted and identified. The number of small nematodes passed was estimated from the average number per 10-Gm. sample of the daily output. The remaining feces was screened using a 10- and 20-mesh screen to determine the number of macroscopic worms passed.

After the elimination of worms had ceased, the animals were destroyed for necropsy and thoroughly examined for remaining parasites. The abomasum and small intestine were tied off, opened separately in warm tap water, and the mucosa was thoroughly scraped with a rubber-covered instrument and rewashed to remove possible adhering worms. The total number of small nematodes of each species was estimated from counts in 20-cc. samples. Then, the mixture was

screened for macroscopic parasites which were identified and counted. The entire content of the large intestine was screened for *Oesophagostomum radiatum* and *Trichuris discolor*.

EXPERIMENTAL RESULTS

The results obtained by administration of piperazine citrate solution to 10 calves are summarized (tables 1-4).

The 14.2-Gm. dose level was 100 per cent effective against *Oe. radiatum* and 20.6 to 100 per cent effective against *Cooperia* spp. (table 1). It also showed action against *Haemonchus contortus*, *Ostertagia ostertagi*, and *Bunostomum phlebotomum* with lesser action against *T. discolor* and *Trichostrongylus axei*. At this dose level, the drug was 50.0 to 66.6 per cent effective in removing *Nematodirus* spp., although only 2 animals (98 and 88) were infected, both lightly, with these parasites.

The results with the 7.1-Gm. dose level indicate little justification of the larger dosage, except in the case of hookworm and *Cooperia* worm infections (tables 2, 4). Both dose levels were ineffective against liver fluke, *Fasciola hepatica*; lungworm, *Dictyocaulus viviparus*; intestinal worm, *Capillaria bovis*; or tapeworm, *Moniezia* spp. All these were light infections and only 2 calves had liver flukes, 2 had lungworm, while 1 had both tapeworms and *Capillaria* spp. at necropsy.

The data indicate that piperazine citrate in the doses given is equally as effective as phenothiazine¹¹ against nodular worms (*Oe. radiatum*) in cattle and is more effective than phenothiazine against *Cooperia* spp. and whipworms (*T. discolor*) but less effective against stomach worms, especially *H. contortus* and *T. axei*. Furthermore, piperazine citrate has a decided advantage because of its quicker action, removing 99.3 per cent of all mature worms eliminated within 24 hours after treatment.

Larval stages of parasites were found on necropsy, whereas few were eliminated after treatment, indicating the necessity of re-treatment after these larvae have reached maturity.

There were no deleterious effects on the

Parasitologist (Swanson), assistant in parasitology (Stone), research assistant (Wade), University of Florida, School of Veterinary Medicine Agricultural Experiment Station, Gainesville.

University of Florida, Agricultural Experiment Station journal series No. 521.

Piperazine citrate was supplied by E. R. Squibb and Sons, Brooklyn, N. Y.

TABLE 1—The Results Obtained by the Administration of Piperazine Citrate to Calves at a Dose Rate Equivalent to 14.2 Gm. of Anhydrous Piperazine Per 100 lb. of Body Weight

Worms eliminated following treatment										
Host animal	Weight in lb.	Treatment date	H. contortus	O. ostertagi	T. axei	Cooperia spp.	B. phlebotomum	Oe. radiatum	T. discolor	Nematodirus
1030	390	3-22-55	44	4,082	0	18,170	81	154	59	0
8	243	4-15-55	26	20	40	1,275	1	3	20	0
98	140	5-12-55	51	9	0	114	4	0	0	3
88	240	5-18-55	0	0	0	1,564	0	0	2	2
58	293	6-14-55	129	0	344	459	6	26	0	0
Necropsy date			Worms found on necropsy							
Elapsed time										
1030	3-31-55	9 days	1,239	1,240	12,780	0	117	0	478	0
8	4-21-55	6 days	13	0	0	0	1	0	30	0
98	5-17-55	5 days	39	50	1,370	440	50	0	107	3
88	5-22-55	4 days	1	0	0	80	0	0	0	1
58	6-20-55	6 days	108	320	3,280	10	11	0	0	0
Per cent efficacy obtained										
1030	-----	-----	5.4	76.7	0.0	100.0	40.9	100.0	11.0	---
8	-----	-----	66.6	100.0	100.0	100.0	50.0	100.0	40.0	---
98	-----	-----	56.6	15.2	0.0	20.6	7.4	-----	0.0	50.0
88	-----	-----	0.0	-----	-----	95.1	-----	-----	100.0	66.6
58	-----	-----	54.4	0.0	9.5	97.9	35.3	100.0	-----	---

TABLE 2—Percentage of Efficacy Based on the Total Worm Burden in Those Calves Receiving the Equivalent of 14.2 Gm. of Anhydrous Piperazine Per 100 lb. of Body Weight

	H. contortus	O. ostertagi	T. axei	Cooperia spp.	B. phlebotomum	Oe. radiatum	T. discolor	Nematodirus
Worms eliminated	250	4,111	384	21,582	92	183	81	5
Worms retained	1,400	1,610	17,430	530	179	0	615	4
Total worms	1,650	5,721	17,814	22,112	271	183	696	9
Per cent efficacy	15.1	71.9	2.1	97.6	35.9	100.0	11.6	55.5

TABLE 3—The Results Obtained by the Administration of Piperazine Citrate to Calves at a Dose Rate Equivalent to 7.1 Gm. of Anhydrous Piperazine Per 100 lb. of Body Weight.

Host animal	Weight in lb.	Treatment date	Worms eliminated following treatment							
			H. contortus	O. ostertagi	T. axei	Cooperia spp.	B. phlebotomum	Oe. radiatum	T. discolor	Nematodirus
3	220	3-9-55	10	0	257	15,167	7	36	0	0
3	287	1-23-56	24	165	0	827	0	24	0	0
4	226	2-6-56	4	0	0	3,093	0	35	0	0
6	275	3-19-56	8	96	0	2,068	0	96	0	0
10	255	4-9-56	33	0	0	6,582	0	123	0	0
Necropsy date		Elapsed time	Worms found on necropsy							
3	3-11-55	2 days	7	0	866	133	6	0	0	0
3	1-30-56	7 days	396	0	45	780	10	0	0	0
4	2-13-56	7 days	211	40	100	3,870	9	0	0	0
6	3-26-56	7 days	237	0	80	1,960	10	0	2	0
10	4-16-56	7 days	60	20	220	1,840	16	0	0	0
Per cent efficacy obtained										
3	-----	-----	58.8	-----	22.9	99.1	53.8	100.0	---	---
3	-----	-----	5.7	100.0	0.0	51.3	0.0	100.0	---	---
4	-----	-----	1.9	0.0	0.0	44.4	0.0	100.0	---	---
6	-----	-----	3.3	100.0	0.0	51.3	0.0	100.0	0.0	---
10	-----	-----	35.5	0.0	0.0	78.2	0.0	100.0	---	---

TABLE 4—Percentage of Efficacy Based on the Total Worm Burden in Those Calves Receiving the Equivalent of 7.1 Gm. of Anhydrous Piperazine Per 100 lb. of Body Weight

	H. contortus	O. ostertagi	T. axei	Cooperia spp.	B. phlebotomum	Oe. radiatum	T. discolor	Nematodirus
Worms eliminated	79	261	237	27,737	7	314	0	0
Worms retained	911	60	1,311	8,583	51	0	2	0
Total worms	990	321	1,568	36,320	58	314	2	0
Percent efficacy	8.0	81.3	16.4	76.4	12.1	100.0	0.0	---

health of the animals as a result of the treatment given. In 1 animal (98), the feces remained loose throughout the experiment, while in 3 others (3, 1030, and 8), the feces were loose at first but were firm after the second day. At necropsy, calf 4 showed a small edematous area and slight irritation of the mucosa of the abomasum and calf 98 had a "paint brush" hemorrhage in the cecum and first 3 ft. of the colon. Calf 8 had some lung lesions attributed to lungworm infection. In the opinion of the authors, none of the changes or lesions were due to the action of the drug.

DISCUSSION

These tests indicate that piperazine citrate solution is of value as an anthelmintic for cattle. The drug appears especially effective against nodular worms (*O. radiatum*), Cooperia worms, and the lesser stomach worm (*O. ostertagi*). It also showed action against hookworms (*B. phlebotomum*), wireworms (*H. contortus*), and the thread-necked strongyle (*Nematodirus* spp.) with lesser action against whipworms (*T. discolor*) and the bankrupt worm (*T. axei*). From the experimental evidence presented here, it is the most effective drug against Cooperia spp. in cattle. Calves harboring *Neoscaris vitulorum*, the large intestinal roundworm, were not available for these tests. Further work is necessary to determine possible effective dose levels of the drug for these and other pathogenic parasites of cattle. Piperazine citrate apparently will not replace phenothiazine as an anthelmintic for cattle but should be an effective supplement to the latter.

SUMMARY

A single oral dose of piperazine citrate solution equivalent to 7.1 or 14.2 Gm./100 lb. of anhydrous piperazine resulted in the elimination of 100 per cent of mature *Oesophagostomum radiatum* from calves.

The result with Cooperia spp. was 97.6 per cent eliminated with 14.2 Gm./100 lb. and 76.4 per cent with 7.1 Gm./100 lb.

For the other parasites, the percentage eliminated with the dosage of piperazine citrate per 100 lb. of body weight was:

Nematodes	Eliminated (%)	Dosage (Gm.)
<i>Haemonchus contortus</i>	15.1	14.2
	8.0	7.1
<i>Ostertagia ostertagi</i>	71.9	14.2
	81.3	7.1
<i>Trichostrongylus axei</i>	2.1	14.2
	16.4	7.1
<i>Bunostomum phlebotomum</i>	33.9	14.2
	12.1	7.1
<i>Trichuris discolor</i>	11.6	14.2
	00.0	7.1
<i>Nematodirus</i> spp.	55.5	14.2

Piperazine citrate was nontoxic for calves at the above doses. It shows considerable promise as an anthelmintic for gastrointestinal nematodes in cattle.

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Serological evidence suggests that primary histoplasmosis is not uncommon in southern Ontario.—*Canad. J. Pub. Health*, Jan., 1957.

What Is Your Diagnosis?

Because of the interest in veterinary radiology, a case history and accompanying radiographs depicting a diagnostic problem are usually published in each issue of the JOURNAL.

Make your diagnosis from the picture below—then turn the page ▶



Figure 1

History.—A saddle gelding, 8 years old, had been periodically lame in the left foreleg for two years. During the past year, the lameness had increased until the horse, even while resting, avoided bearing full weight on the affected leg. The digit had gradually enlarged in the area of the pastern joint. Radiographs of the digit were taken.

(Diagnosis and findings are reported on the next page)

Here Is the Diagnosis

(Continued from preceding page)

Diagnosis.—Ringbone in a gelding.

Comment.—This is a "classical ringbone"—an exostosis that encircles the phalanges of the pastern joint as distinguished from a "low ringbone" at the pedal articulation (coffin joint) or a "high ringbone" which affects the proximal two thirds of the first phalanx.¹

Such exostoses are primarily caused by chronic strain at the attachment of collateral ligaments, usually due to an unbalanced foot.



Fig. 2—Photograph of the forelegs of the 8-year-old gelding showing the ringbone at the left pastern joint, also the characteristic pose to reduce bearing of weight on the leg. Notice the "pointing" and partial flexing of the limb.

The radiograph and case report were supplied by the Clinical Staff of the School of Veterinary Medicine, University of Illinois, Champaign.

¹Guard, W. F.: *Surgical Principles and Technics*. (1951): 97. Published by the author at Columbus, Ohio.

The Use of Cortisone in the Treatment of Infectious Keratoconjunctivitis (Pink-Eye) in Cattle

GEORGE C. SCOTT, D.V.M.

Rushville, Illinois

ONE OF THE PROBLEMS confronting the veterinarian in cattle practice is the treatment of infectious keratoconjunctivitis (pink-eye). Although spontaneous recoveries often occur,⁶ the severely infected animals may, as a result of intraocular pressure, develop bulging areas on the cornea which later rupture or form ulcers and cause discomfort or blindness. While it is important that the pain resulting from such lesions be relieved as rapidly as possible, the loss of body weight accompanying pink-eye is of more economic importance to the livestock owner. Because of the pain and photophobia, affected animals may eat little, preferring to remain in darkened or shaded places. If blinded, they are often unable to find the feeding area. Thus, their loss of weight may be greater than that resulting from more severe systemic diseases which respond more readily to treatment.

The average course of untreated cases of bovine pink-eye seemed to be two to six weeks, longer if there was a perforated corneal ulcer. About 95 per cent of the untreated animals recover completely.

When antibiotic powders are applied locally, the course of the disease, in the absence of corneal ulcers, is usually five to ten days, depending on the duration of infection before the first treatment. Almost 100 per cent of the affected animals recover when antibiotics alone are used.

TREATMENT

The steroids provide the veterinarian with a new means of treating such inflammatory conditions. One of their most striking properties is the ability to reduce inflammation, hyperemia, and proliferative changes.⁴ Although the steroids have no antibacterial activity, they seem to relieve corneal or ocular pain within a few hours, even though the lesion may be unaffected. The incidence of vascularization and corneal scarring following rupture of corneal ulcers is also reduced when the steroids are used.⁵

⁶Dr. Scott is a general practitioner in Rushville, Ill.

Since their introduction, the steroids have been widely used in the treatment of conjunctivitis, keratitis, and other ophthalmic conditions in small animals. When infection is present, they should be used with suitable antibiotics or other antibacterial agents. A 0.5 per cent ophthalmic suspension (5% cortisone acetate diluted 1:10 with water or saline) has been recommended for use in ophthalmic conditions in small animals.³ Others¹ believe that any concentration of cortisone acetate from 0.5 to 2.5 per cent is satisfactory. The suspension should be applied at least twice daily for a more continuous effect. To maintain the action of cortisone acetate over a longer period and to establish sufficient therapeutic levels in the deeper structures of the eye, it may be advisable to administer cortisone parenterally, as well as locally, to the more severely affected animals. If the parenteral injection is made subconjunctivally (20-gauge needle), a precipitate will form which, in dogs,² remains unabsorbed for five to seven days. By this method, it is believed that the action of cortisone can be maintained in the affected area longer than it can by the intramuscular route. Also, a smaller amount of suspension is required for the subconjunctival route than for the intramuscular injection, an important economic factor.

CASE REPORTS

Since the literature contains little concerning the use of cortisone in ophthalmic disorders in cattle, the following cases, treated in July and August, 1955, are reported.

Case 1.—A steer, weighing 550 lb., showed excessive lacrimation, inflamed conjunctiva, severely engorged conjunctival blood vessels, and complete corneal opacity with incipient corneal ulcers in both eyes.

This steer was placed in a dark stall, 150 mg. (3 cc.) of cortisone acetate was injected intramuscularly, and antibiotic powder was puffed into both eyes. A plastic tube of antibacterial powder (sulfona-

mides, antibiotics, and local anesthetic) and a cortisone acetate ophthalmic suspension (0.5%) were dispensed to the owner with directions to apply both to the eyes twice daily. In 48 hours, a second injection of cortisone acetate (100 mg.) was given intramuscularly. One corneal ulcer had ruptured but the other eye had improved so that the steer was able to distinguish objects. Local treatment was continued for five days. When examined two months later, there was a small scar where the cornea had ruptured but the other eye seemed normal.

Several other animals in this herd were affected but usually in only one eye. Those showing opacity or ulcers of the cornea were treated once with cortisone acetate (100 to 150 mg.) intramuscularly and antibiotic powder locally, and then were released with the herd. All recovered with no permanent corneal damage.

Case 2.—A steer, weighing 650 lb., showed extreme lacrimation and congestion of the conjunctiva in both eyes. One cornea had a perforated ulcer; the other cornea was completely opaque with an incipient ulcer.

The steer was given cortisone acetate (150 mg.) intramuscularly and antibiotic powder was applied to the eye. Both treatments were repeated in 48 hours. Within ten days, the animal was able to see well and all signs of ocular irritation had disappeared. Several other affected animals in this herd were treated once with cortisone acetate (50 to 150 mg.) intramuscularly and antibiotic powder locally. All seemed completely recovered in seven to ten days.

Case 3.—A 4-H steer, weighing 450 lb., was severely affected in the left eye. The cornea was opaque with an incipient ulcer.

Cortisone acetate (100 mg.) was injected intramuscularly. The cortisone acetate suspension and a tube of antibiotic powder were dispensed for local application twice daily. Within 48 hours, the excessive lacrimation had ceased. In five days, the corneal ulcer had healed and the eye seemed normal, except for a small scar which did not impair vision.

Case 4.—The 950-lb. nurse cow for the 4-H calf (case 3) developed the infection, with a completely opaque cornea in the left eye, approximately one week after her foster calf was affected.

Cortisone acetate (100 mg.) was administered intramuscularly and an antibiotic powder was dispensed for application to the eye twice daily. Five days later, the left eye had returned to normal but an incipient corneal ulcer had developed in the opposite eye. Cortisone acetate was again injected intramuscularly (50 mg.) and, also, subconjunctivally (50 mg.) in the right eye. Antibiotic powder was to be applied twice daily. In five days, the right eye seemed normal.

Case 5.—A Hereford cow, 6 years old, weighing 950 lb., developed a severe case of keratoconjunctivitis in one eye with corneal opacity and an incipient corneal ulcer.

Cortisone acetate (50 mg.) was injected subconjunctivally and antibiotic powder was applied to the eye. The owner was advised to reapply the antibiotic powder in 48 hours. Lacrimation stopped in three days and the animal eventually recovered.

Cases 6 and 7.—Two Hereford cows, weighing about 1,000 lb. each, had infectious keratoconjunctivitis and marked corneal opacity in one eye. Cortisone acetate (50 mg.) was injected subconjunctivally and antibiotic powder was applied to the affected eyes. Three days later, the eyes of both animals were normal.

DISCUSSION

Excellent results in the treatment of severe infectious keratoconjunctivitis with incipient or perforated corneal ulcers have been obtained by using intramuscular injections of cortisone acetate (100 to 150 mg.) in conjunction with daily local treatment with antibiotic ophthalmic powder. More rapid recovery is attained if a suspension of cortisone acetate (0.5%) is instilled into the conjunctival sac. Cortisone acetate (50 mg.), injected under the bulbar conjunctiva, seems to provide a more prolonged action and gives more satisfactory results than larger amounts of cortisone acetate given intramuscularly. If the animals can be treated in the early stages, before ulcers have eroded the cornea too deeply, one subconjunctival injection with concurrent antibiotic therapy is usually sufficient. With this therapy, the duration of the infection is usually two to four days when no corneal ulcers are present and five to ten days when corneal ulcers have formed.

SUMMARY

1) Cortisone acetate seems effective in the treatment of infectious keratoconjunctivitis (pink-eye) in cattle.

2) Seven animals affected with keratoconjunctivitis made relatively rapid recoveries with minimal scarring of the cornea, following the systemic or local use of cortisone acetate in conjunction with antibiotic powder.

ADDENDUM

Since these 7 animals were treated, July and August, 1955, numerous other animals have been given 50 mg. of cortisone acetate subconjunctivally and one local treatment of antibiotic powder, with excellent results.

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Swine Brucellosis from Hares.—Brucellosis was discovered in hares in Denmark in 1951. During hunting seasons, blood samples from these animals have been tested for brucellosis and 4.2 per cent of 1,941 samples were positive. On one plantation, 12 of 31 (38.7%) were infected. The occurrence of brucellosis in swine is undoubtedly due to transmission of the infection through hare carcasses fed to them.—Nord. Vet.-med., Nov., 1956.

Brucellosis and Heart Disease in Man.—A greater prevalence of cutaneous reactions to Brucella was found in patients with heart disease than with other illnesses. When guinea pigs were experimentally infected with Brucella, changes in the heart similar to those in rheumatic disease in man were found at necropsy 1 to 8 months later.—Sci. News Letter, Feb. 2, 1957.

Brucellosis in the Netherlands.—Brucellosis occurs in cattle, horses, goats, and

sheep, but not in swine in the Netherlands. Serological tests on 211 slaughterhouse employees, and a controlled group of 233 persons not so employed, resulted in positive reaction in 28.4 per cent of the former and 1.7 per cent of the latter group. *Brucella abortus* rarely produced marked clinical symptoms in man.—J.A.M.M.A., Jan. 26, 1957.

Mastitis Prevention

Present attempts at preventing mastitis are simply efforts to shield the udder from its artificial man-made environment. Mastitis is a domestication or exploitation problem; the predecessors of the present cow were not appreciably plagued by this disease. Many diseases have resulted from man's interference with the normal evolutionary development of animal species.

The dairy industry can not afford the continuing cost of specific isolation of causative agents, of specific treatments, or expensive attempts at mastitis prevention. If all human foods are to be eventually sterilized, what effect will this have on the adaptability of the human being to environmental organisms? Such diseases as ketosis, parturient paresis, and mastitis are on the increase, apparently because an increasing number of cows can not adapt themselves to man-made environment. We now demand that a cow take from her system substances required to develop a calf and, at the same time, produce several thousand pounds of milk. Instead of trying to relieve mastitis temporarily, intensive research should be conducted to learn why cows have this disease.—R. E. Nichols, D.V.M., in Hoard's Dairyman, Jan. 25, 1957.

Bovine Listeriosis Mastitis.—Clinical mastitis of one rear quarter of the udder of a 6-year-old cow was found to be caused by *Listeria monocytogenes* serotype 1 (Paterson). After an acute onset, the mastitis assumed a chronic character with moderate swelling and induration but no general symptoms. The milk appeared normal but showed a high leukocyte count. The organism was shed for more than three months. Histologically, the gland was characterized by a slight diffuse interstitial inflammation.—J. de Vries and R. Strikwerda in Zentralbl. f. Bakt., June, 1956.

Bone Structure Changes in Pigs Infected with Hog Cholera

H. W. DUNNE, D.V.M., Ph.D.; S. C. BENBROOK, D.V.M.; E. M. SMITH, Ph.D.;
R. A. RUNNELLS, D.V.M., M.S.

East Lansing, Michigan

EVIDENCE of bone growth disturbance is routinely sought in diagnostic laboratories as evidence of dietary rickets. In the presence of an obviously infectious disease, the occurrence of minor changes at the costochondral junctions is easily overlooked or discounted as irrelevant.

Studies of the relationship between disturbances of bone growth and severe diseases, both infectious and noninfectious, were reported in 1926¹ and 1931² during investigations of the causes of rickets. Routine roentgenograms of the chest and epiphyses of a child after a second illness with severe bronchopneumonia showed the presence of certain lines of dense bone near the end of the epiphyses. In the three preceding years, the child had contracted measles with bronchopneumonia, whooping cough with bronchopneumonia, and uncomplicated bronchopneumonia. Other infectious diseases shown to produce similar lesions included influenza, chickenpox, mumps, and measles. Radiograms of the knee joints of three diabetic children also showed a number of transverse lines attributed to arrested growth. It was admitted,³ however, that clinical histories were incomplete and that in each case one or more virus infections were known to have occurred. A disturbance of rib growth in a child with influenzal meningitis was reported in 1928.³ The lesion was characterized by a much enlarged growing cell zone and a thickened mature cell zone with little evidence that the mature cells were being actively penetrated by the marrow vessels and connective tissue. There was little, if any, deposition of bone. The osteoid and calcium disturbance of rickets was not present.

From the Departments of Microbiology and Public Health, and the Department of Veterinary Pathology, Michigan State University, East Lansing. Dr. Dunne is now with the Department of Veterinary Science, Pennsylvania State University, University Park; Dr. Benbrook, the Biophysics Division, Directorate of Medical Research, C. W. Laboratories, Army Chemical Center, Maryland; Dr. Smith, the Department of Anatomy, College of Veterinary Medicine, Michigan State University, East Lansing; and Dr. Runnels, the Upjohn Company, Kalamazoo, Mich.

Published as Journal Article No. 1987 of the Michigan Agricultural Experiment Station.

The routine incision of the seventh rib of pigs submitted for necropsy at the Veterinary Pathology Diagnostic Laboratory, Michigan State University, revealed that many animals, obviously infected with hog cholera, also appeared to be suffering from a dietary deficiency. In such cases, it was recorded that, in addition to being infected with hog cholera virus, the pigs were being fed a ration that could be deficient in minerals or vitamin D. These lesions were characterized by a widening of the white epiphyseal line, indicating improper calcification.

When the above described lesion was observed to occur with marked regularity in pigs experimentally infected with hog cholera, the dietary explanation for its appearance did not appear logical. The experimental pigs were fed for periods of one to three weeks on a ration containing 3 per cent mineral prior to inoculation with the virus. This mineral consisted of calcium carbonate, 33 parts; iodized salt, 33 parts; steamed bone meal, 33 parts; and trace minerals (iron, copper and manganese sulfates, and cobalt carbonate), 1 part. Vitamin D in the form of irradiated yeast was added at the rate of 1,200 I.U. per pound of feed.

All pigs used in these experiments were from nonimmune sows and were inoculated with hog cholera virus at approximately 8 weeks of age. These animals were in a stage of rapid growth and it appeared that bone growth continued, even though the animal was suffering from a chronic infection.

The lesions observed were of three distinct types: acute, subacute, and chronic. The acute and subacute lesions appeared at the epiphyseal line of the costochondral junction. When present, the lesions were observed in most of the ribs but were most constant in the fifth through the ninth ribs.

The acute and subacute types of lesions occurred most frequently. The extent of these lesions varied from mild to severe. In 179 acute and subacute cases of hog

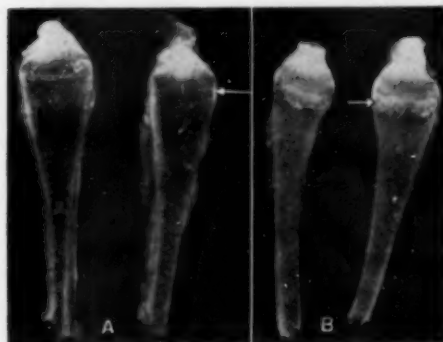


Fig. 1—The longitudinal sections of the costochondral junction of the eighth ribs of normal (A) and hog cholera-infected (B) pigs approximately 10 weeks of age. Notice the narrow, regular epiphyseal line in the normal ribs (arrow) and the contrasting wide irregular line (arrow) in the infected rib.

cholera observed grossly, the degree of involvement occurred as follows:

No gross lesions	11.7 per cent
Mild rib changes	40.9 per cent
Moderate rib changes	23.4 per cent
Moderate to severe changes	21.7 per cent
Severe rib changes	2.3 per cent

Thus it is shown that, upon gross examination, lesions were not readily observed in all pigs with acute and subacute cases of hog cholera. Almost half of the sick animals, however, which were in the terminal stages of hog cholera, showed easily detectable changes in the bone structure at the costochondral junction.

Grossly, the subacute lesions appeared to be an irregular widening of the white line at the costochondral junction. At times, this was not pronounced. In other instances, the line was almost 2 mm. in width. The cartilage separated from bone much more easily than it did in normal animals. This area was friable to the touch. The entire area of the junction appeared white.

A comparison of normal ribs (fig. 1, A) with severely damaged ribs of a pig subacutely infected with hog cholera (fig. 1, B) is shown. The thin white line at the costochondral junction shown by the arrow (A) is in striking contrast to the widened epiphyseal line shown by the arrow (B). Similar severely damaged ribs from an infected pig are shown (fig. 2).

Acute lesions (fig. 3) differed from subacute lesions in that the widened, irregu-



Fig. 2—Enlarged photograph of ribs of hog cholera-infected pigs showing the broadening and the irregularity of the white line (arrow) in an animal which died eight days following inoculation.

lar epiphyseal line appeared more hemorrhagic than white.

The bone lesions in pigs chronically sick with hog cholera occurred as marked transverse lines of solid bone structure across the ribs, from 5 to 10 mm. proximal from the costochondral junction as shown by the arrow (fig. 4). This chronic type of

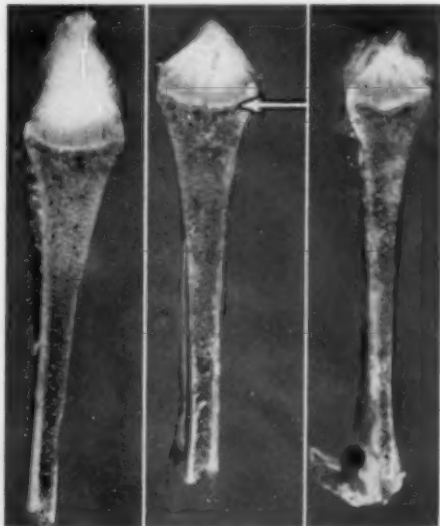


Fig. 3—Ribs from a pig, ten days after infection, showing congestion, hemorrhage, and degeneration of the area at the epiphyseal line (arrow).

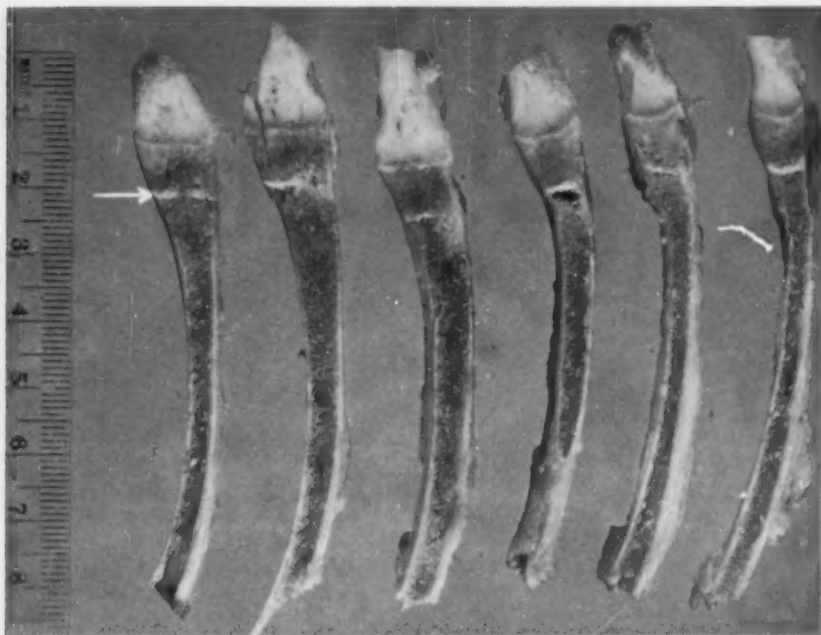
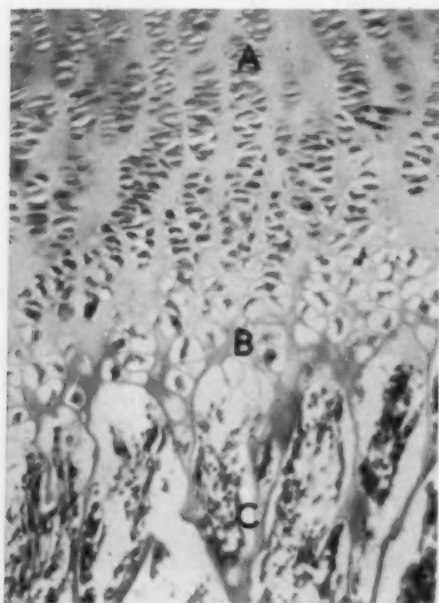


Fig. 4—Ribs from a pig which died 38 days after inoculation and about 30 days after apparent recovery from the acute form of the disease. Notice the transverse line of bone approximately $\frac{1}{2}$ inch below the epiphyseal line (arrow).



lesion occurred in 10 of 12 animals which lived for 38 days or more following inoculation. This lesion was usually easy to detect upon gross examination.

A microscopic examination made of the normal rib structure at the costochondral junction (fig. 5) showed a small zone of lacunar enlargement (B) between the zone of proliferating cartilage (A) and normal bone marrow (C). In comparison with the normal rib, the microscopic examination of the costochondral junction from a pig infected with hog cholera (fig. 6) showed a markedly enlarged area of mature cartilage cells (B) between the zone of cartilage cell multiplication (A) and the irregular trabecular bone (C). The irregularity of this junction of trabecular bone and the

Fig. 5—Microscopic section of a normal rib at the costochondral junction. Notice the regularity of the epiphyseal disc and the small number of cartilage cells with enlarged lacunae (B) which form the line that is observed grossly. The normal developing cartilage cells are shown (A) and the rapidly developing trabecular bone is evident (C). $\times 80$.

TABLE I—Serum Calcium and Phosphorus Determinations of Normal and Subsequently Infected Pigs

Fig (No.)	Normal		Infected		Day after infection
	Ca (mg./100 cc.)	P (mg./100 cc.)	Ca (mg./100 cc.)	P (mg./100 cc.)	
591	9.5	9.22	6.4	14.40	3
592	9.2	9.32	6.5	12.50	4
590	9.9	10.61	8.2	7.31	6
589	9.5	9.22	7.8	7.86	6
587	9.8	6.63	8.0	8.08	6
473	10.2	9.78	9.1	8.54	7
470	9.8	10.00	9.2	9.32	8
466	10.6	10.67	6.6	12.96	8
469	10.9	10.33	9.7	9.12	10

zone of lacunar enlargement was quite evident upon gross examination.

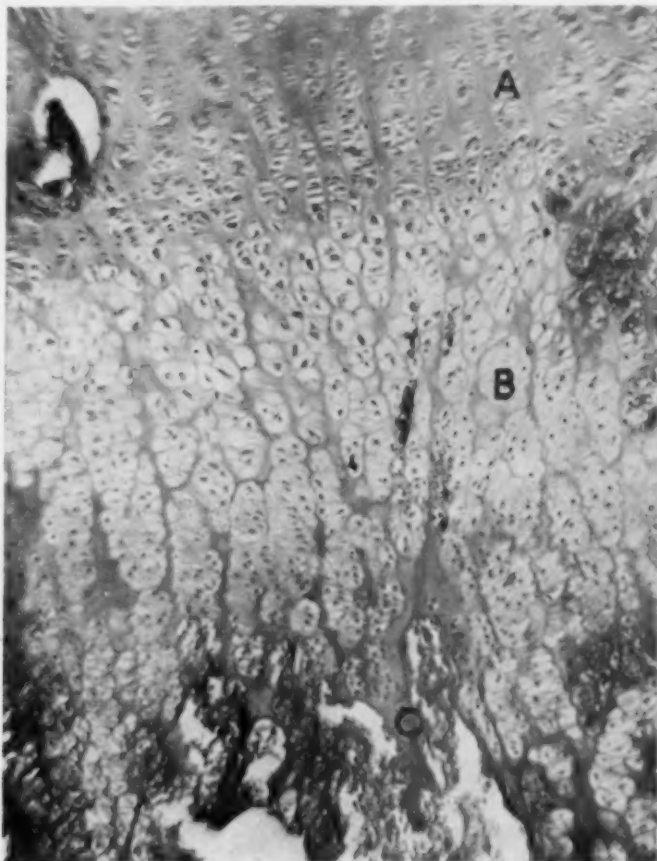
The microscopic examination of chronic-type lesions (fig. 7) revealed three zones representing the cartilage of the epiphyseal disc (fig. 7, A), the ossified transverse striation (fig. 7, D; also shown in fig. 4), and an abnormal appearing spongy bone (fig. 7, C) which apparently resulted

from a continued growth of the bone during the illness. The epiphyseal line (fig. 7, B) appeared normal.

To verify the supposition that a calcium-phosphorus imbalance was responsible for the changes in bone structure described above, calcium and phosphorus determinations were made on blood drawn at different periods during the infection. The most

Fig. 6—Microscopic section of a rib from a pig with an acute infection of hog cholera, showing a markedly increased number of cartilage cells with enlarged lacunae at the costochondral junction (B).

Note the irregularity of the line formed by these cells at the junction of trabecular bone and the zone of lacunar enlargement (C). The zone of cartilage cell multiplication is shown (A). The gross appearance of this rib is shown in figures 1 and 2. x 80.



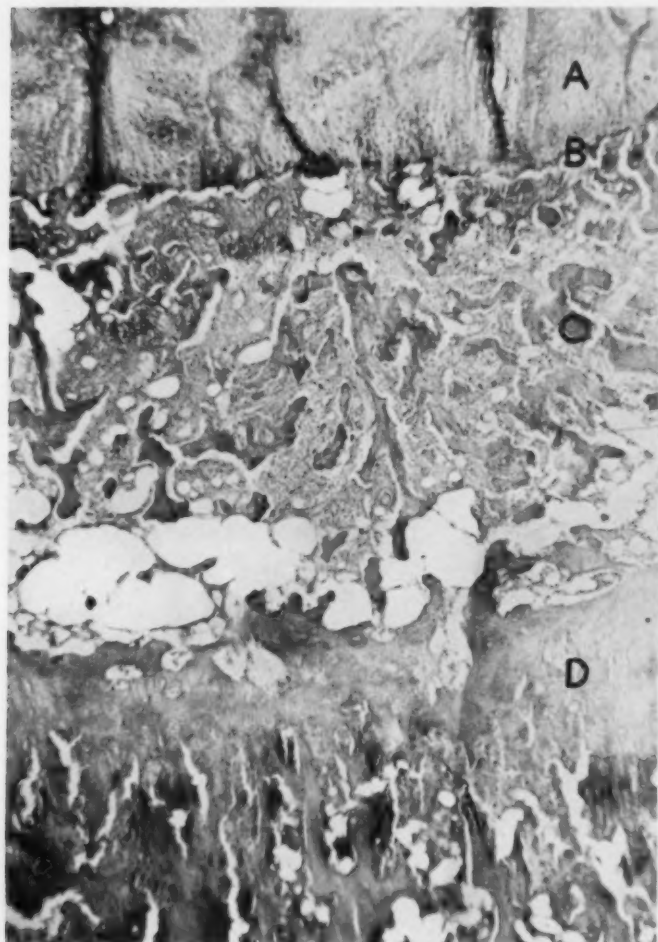


Fig. 7—Microscopic section of rib from a pig with a chronic case of hog cholera (fig. 4). Notice the normal-appearing epiphyseal line (B) at the top and the transverse calcified line (D) near the bottom.

Also shown is a normal-appearing area of cartilage cells (A) and abnormally arranged trabecular bone (C) formed during the course of the disease.
x 80.

marked disturbance of the calcium-phosphorus ratio occurred between the third and sixth days of the infection (table 1). With the exception of one sample from pig 466, the calcium and phosphorus content of the blood seemed to approach normal about the eighth day. A primary acute reaction of the disease was characterized by a marked increase in phosphorus and a decrease in calcium. This appeared to be followed by a decrease in both calcium and phosphorus on the sixth day.

DISCUSSION

The manifestation of bone growth disturbance at the costochondral junction in

weaned pigs infected with hog cholera virus was not considered as pathognomonic for hog cholera. It is possible that this condition may be associated with other diseases. The authors, however, have not observed the lesion in swine ill with any infectious disease except hog cholera. The failure of the bone to develop properly apparently was due to a disturbance of metabolism which prevented the normal conversion of mature cartilage to bone in the area of rapid growth. This disturbance of metabolism seemed to persist for only a short time. If the pig survived sufficiently long for the infection to be considered chronic, apparently an attempt was made

by the body's defense mechanism to adjust to the disease. The growth of bone then continued in a more or less normal pattern. In this period of adjustment, the calcium and phosphorus content of the blood returned almost to normal, and the abnormal accumulation of mature cartilage cells was replaced by a wide disc of osteoid tissue which became ossified. The transverse ossification thus formed retained its position as the rib grew distally during the course of the infection, allowing the formation of calcified spicules between it and the epiphyseal disc.

Changes in the tibia of man,² as associated with diabetes, were not observed in hog cholera-infected pigs.

The disruption of metabolism in young pigs by infection with hog cholera virus suggests a parallel to fetal growth disturbance resulting from the vaccination of sows with live virus early in pregnancy.⁴ The anomalies caused by such vaccinations were apparently the result of a similar failure of bone development at a crucial stage of fetal growth. The disturbance of shell quality of eggs laid by hens suffering from infectious bronchitis and Newcastle disease^{5,6} represents a similar metabolic malfunction resulting in the abnormal deposit of calcium.

It is also reasonable to assume that some connection might be drawn between the development of a transient calcium deficiency and the occurrence of convulsions associated with specific strains of hog cholera virus.⁷ It is difficult, however, to explain why the intravenous injection of therapeutic doses of calcium gluconate failed to stop convulsions or to prevent their recurrence.

SUMMARY

1) Rib lesions observed in pigs acutely infected with hog cholera occurred at the costochondral junction and were characterized by a mildly irregular epiphyseal line with an adjacent narrow transverse band of hemorrhage.

2) In pigs with subacute infections of hog cholera, there was a marked widening of the epiphyseal line by an increased number of cartilage cells with enlarged lacunae.

3) Pigs with chronic cases of hog cholera commonly had dense osseous transverse lines proximal to the epiphyseal disc.

4) The metabolic disturbance was char-

acterized by an early increase in phosphorus and a decrease in calcium.

5) A comparison is drawn between the occurrence of rib lesions, fetal malformation, soft-shelled eggs, and encephalitic symptoms as the result of virus infection.

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A Hog Cholera Survey in Ohio

Because of the national movement to institute hog cholera eradication in the United States, the Division of Animal Industry sent a questionnaire to the veterinarians doing swine practice. Of 297 reporting, 29.1 per cent were using live virus and serum; 16.1 per cent, modified vaccine alone; 54.0 per cent, modified vaccine and serum; and 0.8 per cent were using other methods. Of those answering, 94 per cent were satisfied with results with modified vaccine; 69 per cent favored prohibiting the use of live virus in Ohio; and 91 per cent favored prohibiting the use of live virus at all auction markets.—*Anim. Dis. Trends, Ohio Agric. Dept., Dec., 1956.*

In North Dakota, there has been little loss from hog cholera in the past six years, but atrophic rhinitis continues to spread rapidly.—*Ann. Rep. North Dakota Livestock San. Board, 1955-1956.*

An average of 12.3 pigs per litter was recently marketed by an Iowa hog producer. His 15 sows farrowed 203 live pigs, 187 of which were weaned and 183 marketed.—*Successful Farm., Feb., 1957.*

Nutrition

Studies on Bloat

A large percentage of losses from bloat in ruminants occurs on legume pasture as well as in the feedlot. Frothy bloat has been produced in 11 cattle by feeding 14 lb. of concentrate (barley 61%, alfalfa meal 22%, soybean oil meal 16%, and sodium chloride 1%) plus 4 lb. of alfalfa hay daily. This ration continued to produce bloat in these animals over a period of four or five months. Some were more susceptible than others, suggesting that the tendency to bloat may be inherited. Ruminal contractions increased in frequency as the animal began to bloat. The metabolic activity of the ruminal microorganisms and the physical nature of the ruminal content changed when the animals were fed this bloat-producing ration.—*Agric. Res.*, Feb., 1957.

Pathology of Vitamin B₁₂ Deficiency

Less is known of the brain lesions in vitamin B₁₂ deficiency than of lesions in the spinal cord and peripheral nerves which have long been described as "sub-acute combined degeneration." In two persons with fatal cases, the brain lesions were essentially similar to those in the cord, i.e., diffuse and focal areas of degeneration in the white matter with relatively little proliferation of fibrous glia. These account for the mental and ophthalmological symptoms which are nearly always due to optic atrophy. Of 14 persons with varying degrees of mental derangement due to this deficiency, 11 recovered after intensive treatment with vitamin B₁₂.—*Brit. Med. J.*, Dec. 15, 1956.

Phytic Acid and Calcium Absorption.—Phytic acid, which is found in certain cereals and in brown bread, can prevent vitamin D poisoning and urolith formation, conditions in which too much dietary calcium is absorbed from the intestine. Sodium phytate, given orally, combines with dietary calcium and magnesium in the stomach and intestine to form salts which can not pass through the intestinal wall.—*Sci. News Letter*, Feb. 2, 1957.

The Absorption of Colostrum.—By using labeled globulins from colostrum whey, it has been demonstrated that this protein passes from the lumen of the intestine through the epithelial cells of the villi into

the lymphatics in lambs and kids up to 36 hours old, just as had been previously shown with calves. The epithelial cells of older animals did not contain these globules.—*Nature*, Dec. 15, 1956.

Absorption of Antibodies.—The absorption of antibodies from the gut ceases, in young rats, abruptly at 20 days of age regardless of their ration. By surgical intervention, it was indicated that antibodies possibly passed directly across the placenta from the maternal circulation to that of 20-day-old fetal rats.—*Vet. Bull.*, Dec., 1956.

Nutrition and Duration of Gestation

When pregnant Merino ewes were changed, two to six weeks prior to parturition, from an adequate ration to a high, medium, or low plane of nutrition, the gestation period was invariably shortened as the nutritional plane was lowered. Gestation varied from 147.5 to 151.0 days for the well-fed ewes, to 145.3 to 149.1 days for the poorly fed ewes. Most of the ewes had single lambs. This suggests that insufficiency of fetal nutrition is a factor in the initiation of parturition.—*Nature*, Nov. 10, 1956.

Food and the Eskimo Birth Rate.—When Eskimo women lived on their traditional pure animal diet of whale, fish, and seal, they became pregnant only once in several years, but when they changed to "white man's food," the birth rate increased threefold. However, they formerly nursed their children three or four years, whereas they now nurse them only a few months.—*Nature*, Nov. 17, 1956.

Of the 35,000 known species of fish, less than 1 per cent are being partially utilized as sources of food, oil, animal feed, or fertilizer. Little is known about the habits or potential source of such products in the other species. A chemical which may be used in the treatment of diabetes was recently found in a toadfish. Seaweeds are used to make casings for sausages, and the potential value of other aquatic animals and plants are being explored.—*Ichthyological Res. and Develop. Corp.*, Coral Gables, Fla.

Swine Peculiarities and Management

Swine are probably the least understood of our domesticated animals. They are at once the most intelligent, obstinate, and ferocious when aroused, of our livestock species. Like man, they are omnivorous. However, because of their physical peculiarities, captive swine are most dependent on man for protection from the elements. Their short limbs, inability to climb or jump, and their thin hair make floor drafts a constant hazard, especially for the young. Because of their lack of sweat glands, they are most susceptible to heat injury.

At the end of World War I, we learned a little, the expensive way, about housing swine. Many producers, in expanding their successful business, built "modern" hog houses, the most elaborate of which often proved to be veritable death chambers. With cement floors, steel bar partitions, and high ceilings, the unhappy hog had to lie on cold floors with nothing to stop drafts, while its body heat rose and radiated through the many roof windows. Fortunate, and usually more thrifty, were the lowly swine whose owner, either because of keener perception or financial limitations, housed them in low small buildings or mere straw sheds.

Fortunately, sanitation, a paramount necessity in swine husbandry, is not dependent on artistry.

RESTRICTED VENTILATION

Ventilation of hog houses has been studied nearly as much as that of dairy barns. To all interested, a report in the *Veterinary Record* (Dec. 22, 1956: 1030) may well be surprising. Because of serious losses due to respiratory complications in fattening hogs on two commercial hog farms in England, the buildings in which they were confined were remodeled.

The large, airy, concrete houses were divided by solid partitions 6.5 ft. high on which an asbestos ceiling was laid. No bedding was used, the doors to the central feeding area closed automatically, and the only ventilation was through windows—4 to 5 square inches per animal. Even though the humidity and heat produced an oppressive "Turkish bath type of atmosphere," the hogs "showed no signs of stress, and sickness [was] . . . reduced."

For a two-year period, the benefits "exceeded all expectations." However, the authors wisely warn others to try this only on a small scale at first.

Young pigs, with more delicate skins, might be affected by such damp floors and atmosphere. However, in this country, somewhat similar revamping of hog houses has often been beneficial in raising pigs. Their thriftiness has been increased, and the labor of cleaning pens practically eliminated, by enclosing their sleeping quarters (pens) with sacks or canvas tacked on the partitions and hung in the door, then building a ceiling of loose straw, 4 to 6 in. thick, to rest on the partitions.

The low, straw ceiling prevents body-heat wastage, yet allows ample ventilation.

EXERCISE FOR PREGNANT SOWS

The importance of regular exercise for breeding animals, especially when pregnant, is recognized but seldom demonstrated by controlled research. In a limited experiment (*Vet. Rec.*, May 26, 1956: 315) in England, confined gilts were bred, then 6 were turned on pasture until they farrowed, after which they had access to a grass lot; 6 others were continued indoors or on concrete. The former averaged 12 pigs farrowed and 9.5 weaned; the latter, 8.4 farrowed and 4.4 weaned. Other sows, placed on pasture during pregnancy, then confined, had an average of 9.16 weaned pigs. The confined sows were given balanced rations but the amount of roughage fed and the possibility that anemia may have affected the pigs is not mentioned. The value of exercise is indicated.

A SWINE MANAGEMENT SURVEY

A survey was conducted among swine husbandrymen by the American Feed Manufacturers Association in 1956. Among the recommendations of interest to veterinarians (some of whom participated) are:

Best farrowing house temperatures are 55 to 65 F., not above 85 F.; heat lamps to be used when temperatures are below 65 F.; farrowing crates to be 24 inches wide by 6 to 7 ft. long.

The teeth to be clipped (tips only) the first day. For anemia prevention (when not on pasture), clean soil or iron-compound medication is to be given from 1 to 3 weeks of age; creep feeding to start when 1 week old; castration to be done when less than 4 weeks old; and pigs to be weaned (without milk substitutes) when 5 to 6 weeks old.

After considering the complexities involved, the A.F.M.A. committee wisely decided not to recommend the best ages for vaccinating for hog cholera or erysipelas, or treating for worms.

Current Literature

ABSTRACTS

Paper Electrophoresis of Bovine Serum

A system for the paper electrophoretic analysis of bovine serum proteins is described. A five-hour run at 21 ma. constant current, using a $\mu=0.053$ veronal buffer system is recommended. The hanging strip cell and Whatman 3-mm. filter paper were used. Examples of normal and pathological serum protein patterns are presented and their interpretation is discussed. Bovine serum does not separate as well as human serum, and alpha globulin could never be separated into two components. Two gamma globulins could usually be demonstrated.—[J. R. Rooney, II: *Paper Electrophoresis of Bovine Serum*. *Am. J. Vet. Res.*, 18, (Jan., 1957): 67-72.]

Iron-Binding Capacity of Lambs

The plasma iron and iron-binding capacity in 5 wether and 5 ewe lambs, 8 months old, and in the same wether lambs when 1 year old were determined. In the case of the 8-month-old animals, samples were taken every six hours for 48 hours. In the case of the year-old animals, samples were taken every six hours for 24 hours. The plasma iron and iron-binding capacity of 8-month-old ewe and wether lambs did not differ significantly. The plasma iron levels of wether lambs increased from a mean of 133 $\mu\text{g.}/100\text{ ml.}$ to 193 $\mu\text{g.}/100\text{ ml.}$ between the ages of 8 months and 12 months. This increase resulted in an increase from 40 to 58 per cent in the percentage saturation of transferrin with iron.

It appears that, while lambs may possibly show diurnal fluctuation in plasma iron levels when undisturbed, this can not be depended upon when they are maintained under experimental conditions.—[Norman F. Baker and James R. Douglas: *Plasma Iron and Iron-Binding Capacity of Lambs*. *Am. J. Vet. Res.*, 18, (Jan., 1957): 142-146.]

Enterobacteriaceae in Birds

Sixty-one specimens of droppings were collected from 13 species of birds in the vicinity of Tokyo, Japan. The bulk of these were from black-crowned night herons, egrets, and cormorants. Twelve groups of Enterobacteriaceae, including Paracolobactrum and Proteus, but no Salmonella, were found in these droppings. The intestinal flora of the birds resembled that of man and domestic animals and was similar to bacteria found in soils and on vegetables.—[H. E. McClure, W. C. Evland, and A. Kase: *The Occurrence of Certain Enterobacteriaceae in birds*. *Am. J. Vet. Res.*, 18, (Jan., 1957): 207-209.]

Variant Strain of Canary Pox Virus

A variant strain of canary pox virus, when inoculated into scarified, defeathered areas of the skin of the chicken, turkey, and canary, regularly

produced cutaneous papular eruptions. Histological examination revealed the lesions in the chicken and turkey to be characterized by marked inflammation in the corium and subcutaneous connective tissue with the epithelium remaining essentially normal. In the canary, there was massive proliferation of epithelium with numerous intracytoplasmic inclusions, as well as severe subcutaneous lesions.—[Benjamin V. Siegel and R. W. Leader: *Comparative Histopathology of Skin Reactions in the Chicken, Turkey, and Canary Infected with a Strain Variant Canary Pox Virus*. *Am. J. Vet. Res.*, 18, (Jan., 1957): 183-186.]

Effect of Gallogen and Sulfarlem on Bile Flow of the Cockerel

The effect of gallogen (the diethanolamine salt of the mono-(+)-camphoric acid ester of *a*,*a*-dimethylbenzyl alcohol) and sulfarlem (5-(*p*-methoxyphenyl)-1,2-dithiol-3-thione) on the normal bile flow of the cockerel was studied. Gallogen evidently possesses no significant "true" choleretic activity in the cockerel and, therefore, this action can not be involved in its ability to lower serum cholesterol of cholesterol-fed cockerels. The hydrocholeretic activity of gallogen, found only after the intravenous administration of a 40-mg. dose, is slight and of approximately two hours' duration. Sulfarlem, under the same conditions, produced an increase in bile output which appeared to be of the order of 200 to 400 per cent.—[Thomas B. Clarkson, J. Stanton King, Jr., and Nelta H. Warnock: *A Comparison of the Effect of Gallogen and Sulfarlem on the Normal Bile Flow of the Cockerel*. *Am. J. Vet. Res.*, 18, (Jan., 1957): 187-190.]

Furazolidone for Turkey Enterohepatitis

Furazolidone was tested for the prevention and treatment of infectious enterohepatitis (histomoniasis, blackhead) in turkeys which had acquired the disease by exposure to contaminated ground.

Levels tested in the basal (mash) portion of the ration were 0.011, 0.0165, and 0.02 per cent. Free access was allowed to unmedicated whole grains in some experiments; such grains were withheld in others. Since growing turkeys normally shift to a high level of grain intake in relation to mash, proper allowance must be made in computing levels, so that the drug intake is adequate. On a total feed intake basis, the 0.011 per cent level may be considered a practical preventive level. Levels of 0.0165 and 0.02 per cent are therapeutic as well as preventive.

The highest level tested (0.02%) produced no observed detrimental effect on turkeys over 7 weeks of age, except that in breeders approaching egg production, prolonged feeding caused a delay of about two weeks in sexual maturity.—[A. C. Jerstad: *Furazolidone for Infectious Enterohepatitis (Blackhead) of Turkeys*. *Am. J. Vet. Res.*, 18, (Jan., 1957): 174-179.]

Studies on *Pasteurella Multocida*

The colonial morphology and antigenic behavior of variants of *Pasteurella multocida* have been studied by means of obliquely transmitted light and the acriflavine test, respectively. It is proposed that the colonial variants of *Past. multocida* be designated by the standard terminology (smooth, mucoid, and rough) and that the antigenic characteristics be indicated by the letters S, M, and R. A characteristic reaction was observed when freshly isolated type D strains were examined by the acriflavine test. It is pointed out that, besides aiding in the elucidation of variation in this species, the test rapidly identifies nonimmunogenic cultures and those that can not be typed.—[G. R. Carter: *Studies on Pasteurella Multocida. II. Identification of Antigenic Characteristics and Colonial Variants*. *Am. J. Vet. Res.*, 18, (Jan., 1957): 210-212.]

FOREIGN ABSTRACTS

Diagnosis of Experimental Septicemia in Rabbits

Diagnosis of chronic endocarditis is difficult. In many cases, hemoculture remains negative and diagnosis can not be made until the heart can be studied. Improvements in hemoculture technique have increased the possibilities of making an early diagnosis.

Rabbits were inoculated with *Staphylococcus aureus*, *Hemophilus influenzae*, *Streptococcus viridans*, *Streptococcus salivarius*, and *Streptococcus sanguineus*. Then at intervals, blood specimens were taken from these rabbits and injected into embryonating eggs, 8 to 11 days old, by various methods. The vitelline method was reliable and efficient.

It was found that one *Str. viridans* organism per cubic centimeter of blood produced lesions in the inoculated eggs, and a diagnosis of septicemia could readily be made.

Inoculation of chicken embryos greatly facilitates diagnosis of septicemia in rabbits.—[C. Hannon and J. Vigouronx: *Application of Chick Embryo Hemoculture (Hemo-Oviculture) in Experimental Septicemia of Rabbits*. *Ann. Inst. Pasteur*, 91, (1956): 670-677.]—J. P. SCOTT.

BOOKS AND REPORTS

Some Protozoan Diseases of Man and Animals

The papers presented at the conference on Protozoan Diseases of Man and Animals, held by the Section of Biology of the New York Academy of Science on Nov. 17-18, 1955, have been published in book form.

In the first of the three parts of the book, present knowledge of anaplasmosis is summarized in four papers which deal variously with the clinical signs, diagnosis, transmission, prevention, and

treatment of the disease. Among the diverse aspects of anaplasmosis discussed were *in utero* transmission, the important role of the horsefly in transmission, the proposed eradication of the disease from the Hawaiian Islands with the use of the complement-fixation test, and treatment with chlortetracycline and oxytetracycline.

Part II is a review and classification of the piroplasms of domestic animals.

In Part III, toxoplasmosis in man and animals is discussed with respect to the propagation, morphology, and biology of the organism, as well as the laboratory diagnosis and pathogenesis of the disease. The advantages and disadvantages of various methods of propagation, photomicrographs and detailed morphological descriptions, and the biology of *Toxoplasma* are presented. Although the pathogenesis deals mainly with the disease as seen in man and experimental animals, the principles of the disease processes set forth are the same in the domestic animals, especially in the dog. Eyles mentions two groups of drugs—the sulfonamides and the 2,4'-diamino-pyrimidines—which show promise in the treatment of toxoplasmosis. He points out, "Although possessing marked activity individually, perhaps the most outstanding characteristic of the sulfonamides and pyrimethamine is that they act together synergistically . . ." making therapeutic effects possible with lower doses of the drugs. Extensive bibliographies are listed.—[*Some Protozoan Diseases of Man and Animals: Anaplasmosis, Babesiosis, and Toxoplasmosis*. By Clarence R. Cole chairman, Conference Organizing Committee, and 22 other authors. 222 pages. *Annals of the New York Academy of Science*, New York, N.Y. 1956. Price \$3.50.]—R. L. FARRELL.

Cellular Mechanisms in Differentiation and Growth

This book consists of material presented at the fourteenth symposium of the Society for the Study of Development and Growth (June 15-18, 1955). The general theme of the symposium was cellular analysis. Some of the special subjects discussed were biophysics of cell elongation, microbial interactions, and cellular and immunological interactions in higher plants and animals. Research workers in growth studies would find this book of value.—[*Cellular Mechanisms in Differentiation and Growth*. Edited by Dorothea Rudnick. 236 pages. Well illustrated. Princeton University Press, Princeton, N. J. 1956. Price \$7.50.]

Rabbits—A Bibliography

This book has no articles but contains 3,485 references on rabbits, separated by subject and listed alphabetically by author. It also has subject, journal, and author indexes.—[*Rabbits—A Bibliography*. By Laura I. Makepeace. 81 pages. Reproduced by the Multigraph Service, Colorado A. & M. College, Fort Collins, Colo. 1956. Price \$2.00.]

THE NEWS

American Animal Hospital Association Annual Meeting

The American Animal Hospital Association announces that plans are well underway for its twenty-fourth annual meeting at the Sheraton-Palace Hotel, San Francisco, May 8-11, 1957. The meeting will consist of two and one half days of scientific sessions designed for the practitioner of pet animals. Demonstrations will be telecast by means of closed-circuit television through the courtesy of Pitman-Moore Company and Radio Corporation of America. Postconvention trips to Hawaii, Las Vegas, and Reno have been scheduled.

All veterinarians and their wives, for whom a social program is planned, are cordially invited to attend all sessions. Programs and hotel reservation cards will be available about April 1. For further information address Dr. Wayne H. Riser, Executive Secretary, American Animal Hospital Association, 5335 Touhy Ave., Skokie, Ill.

Symposium on Coccidioidomycosis

A symposium on coccidioidomycosis was held at Phoenix Public Library, Phoenix, Ariz., Feb. 11-13, 1957.

The conference was sponsored by the Arizona State Department of Health, U. S. Public Health Service, and the Arizona chapter of American College of Chest Physicians in cooperation with the Phoenix City Health Department.

Drs. Keith Maddy and Charles J. Prchal participated in a panel discussion entitled "Veterinary Aspects of Coccidioidomycosis."

Intermountain V.M.A. Meeting

The twenty-ninth annual meeting of the Intermountain V.M.A. was held in Salt Lake City, Utah, Jan. 24-26, 1957.

Guest speakers included Drs. W. W. Armistead, president-elect of the AVMA, College Station, Texas; Jean C. Flint, Fort Collins, Colo.; E. H. Gibson, Logan, Utah; D. E. Jasper, Davis, Calif.; W. P. Johnson, Pearl River, N. Y.; Lloyd C. Moss, Fort Collins, Colo.; J. H. Newhall, Bozeman, Mont.; J. L. Palotay, Pullman, Wash.; O. W. Schalm, Davis, Calif.; M. J. Swenson, Fort Collins, Colo.; and C. D. Van Houweling, Washington, D. C.

Livestock Conservation Meeting

The annual meeting of Livestock Conservation, Inc., was held in Chicago, Feb. 14-15, 1957.

The first day of the meeting was devoted to a series of group conferences. Groups included the National Brucellosis Committee, Packers Conference on "Evaluation of Bruise and Condemnation Losses," a clinic for humane work-

ers on livestock losses, a railroad conference, a clinic on ways and means of preventing losses at livestock markets, and a conference on designing livestock trailers and analysis of the livestock trucking situation.

The program for the second day's general session consisted of the president's address delivered by Mr. Frank E. Knutzen, Swift and Company; a keynote address by Dr. B. T. Simms, director of livestock research, ARS; and a luncheon address by Mr. Charles B. Shuman, president, American Farm Bureau Federation.

AMONG THE STATES AND PROVINCES

Alberta

Midwinter Conference.—The midwinter conference of the Alberta V.M.A. was held in Red Deer, January 26.

Highlighting the conference were panel discussions on large and small animal medicine. Dr. Morris Hanson of Calgary moderated the large animal medicine panel, and Dr. J. Gordon Anderson moderated the panel dealing with small animal medicine.

• • •
Calgary District V.M.A. Organizes.—An organizing meeting of the Calgary V.M.A. was held in the offices of the Health of Animals Division, Calgary, on December 4. Officers of the newly formed association are Dr. Jack Evans, president; Dr. Morris Hanson, vice-president; and Dr. Edward Eddy, secretary-treasurer. Twenty-one veterinarians attended the inaugural meeting of this new Association.

California

Tulare County Association.—Tulare County V.M.A., at its regular meeting in January, elected the following veterinarians for the coming year: Charles Crane, Porterville, president; R. B. Barsaleau, Visalia, vice-president; and Lionel H. Brazil, secretary-treasurer.

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Alameda Contra Costa Association.—A meeting of the Alameda Contra Costa V.M.A. was held January 23, at the Robin Hood Inn in Oakland, Calif.

The program of the evening consisted of a panel discussion on treatment of diseases of the ear led by Dr. Tom Condon.

Colorado

Conference for Veterinarians.—The annual conference for veterinarians, sponsored by Colorado A. & M. College, was held Feb. 18-20, 1957, at Fort Collins.

Guest speakers included Drs. T. H. Brasmer, Danville, Ill.; R. L. Ott, Pullman, Wash.; H. L. Easterbrooks, Philadelphia, Pa.; R. D. Radeleff, Kerrville, Texas; R. K. Shideler,

Danville, Ill.; and AVMA president Wayne O. Kester.

Special features of the conference included a discussion on organization and procedures of the grievance committee of the Colorado Medical Society, presented by Duane F. Hartshorn, M.D., Fort Collins, and a clinical pathological conference on case reports participated in by practitioners and staff members of the College of Veterinary Medicine, Colorado A. & M. College.

District of Columbia

District Association.—The District of Columbia Veterinary Medical Association held its first quarterly meeting on Jan. 15, 1957, at Dart Auditorium, Armed Forces Institute of Pathology. The following were elected to office for the 1957 session: Dr. Charles G. Durbin, president; Brig. Gen. E. W. Young, first vice-president; Dr. Erven A. Ross, second vice-president; and Dr. William I. Gay, secretary-treasurer.

s/CHARLES G. DURBIN, *Secretary.*

Maine

Maine Auxiliary.—The Women's Auxiliary to the Maine Veterinary Medical Association held its annual meeting at the Lancey House in Pittsfield, Jan. 16, 1957. Our National President, Marie Coombs, who is one of our own members, attended and gave us a most interesting account of the meeting in San Antonio and her trip to Mexico following the Convention.

Donations were voted to the Research Fund, the Student Loan Fund, and to the Memorial Fund in memory of Mrs. Paul R. Baird of Waterville.

Progress was reported on a revision of our Bylaws. The committee expects to have them ready for consideration at our next quarterly meeting in April.

Officers for 1957, elected at this meeting, are Mrs. Robert R. Monahan, president; Mrs. Ladd L. Heldenbrand, president-elect; Mrs. C. William Hersey, vice-president; Mrs. J. Franklin Witter, secretary-treasurer; Mrs. James A. Elliott, Mrs. Stanford D. Merrill, and Mrs.

Indiana

Newly elected officers of the Indiana Veterinary Association are (left to right)—Dr. Russell Portman, Lafayette, president-elect; Dr. L. A. Clark, Bedford, vice-president; Dr. R. W. Worley, South Bend, president; and Dr. Larry Borst, Indianapolis, treasurer.



Arlan E. Freeman, members of the Executive Board.

Mrs. Freeman was also named as delegate to the AVMA Auxiliary, with Mrs. Lewis B. Denton as alternate.

s/VERNA C. WITTER, *Secretary.*

Massachusetts



Speakers at the annual meeting of the Massachusetts Veterinary Association held in Boston, Jan. 23, 1957, were (left to right)—Dr. David K. Detweiler, pharmacologist, School of Veterinary Medicine, University of Pennsylvania (heart diseases in dogs); Dr. Herbert M. Tabbut, Wellesley Hills, Mass., newly elected president of the M. V. A.; and Lt. Col. Thomas C. Jones, chief pathologist, U.S. Army Veterinary Corps (veterinary specialization).



Newly elected officers of the Massachusetts V. M. A. are (left to right)—Dr. Charles M. deVarennes, Quincy, delegate to the AVMA; Dr. Herbert M. Tabbut, Wellesley Hills, president; Dr. Paul R. Granholm, Weston, immediate past-president; and Dr. C. Lawrence Blakely, Needham, first vice-president.

Michigan

Dr. Sales Honored.—A recognition dinner in honor of Dr. Edward K. Sales, head of the Department of Surgery and Medicine, Michigan State University, was held in conjunction with the postgraduate conference for veterinarians, Jan. 22, 1957.

Dr. Sales will begin a year's retirement leave on July 1, 1957. When he retires, Dr. Sales will have completed 37 years of service at Michigan State University. He has taught all but 51 of the veterinary school's 1,350 graduates.

At the dinner, Dr. Sales was presented with a bound volume of letters written to him by his friends and a sum of money which he expects to use for travel.

Mississippi

State Association.—At a meeting of the Mississippi State Veterinary Medical Association, Jan. 22, 1957, Hotel Heidelberg, Jackson, Miss., Dr. B. U. Flynn, practitioner, Canton, discussed plans for publicity work during the coming year. Dr. Jack Ross, Jackson, discussed plans for the annual meeting to be held in July.

s/HARVEY F. MCCRORY, *Secretary.*

Missouri

Kansas City Association.—The Kansas City V.M.A. met Jan. 22, 1957, in the Exchange Building, Kansas City, Mo.

Dr. Edward Ebert, clinician, University of Missouri School of Veterinary Medicine presented a series of case reports from the clinic of the University of Missouri. Dr. Ebert's presentation was illustrated with a number of kodachrome slides and was followed by an informal discussion.

The program also included a film entitled "Stress and the Adaptations Syndrome" shown through the courtesy of Charles Pfizer and Co.

s/R. E. GUILFOIL, *Secretary.*

New Jersey

State Association.—The seventy-third annual meeting of the New Jersey V.M.A. was held at Asbury Park, Feb. 13-14, 1957.

Guest speakers included Drs. Carl H. Clark, Auburn, Ala.; Edward R. Frank, Manhattan, Kan.; John T. McGrath, Philadelphia, Pa.; A. H. Craig, Jr., Indianapolis, Ind.; Jack O. Knowles, Miami, Fla.; Ellis P. Leonard, Ithaca, N. Y.; Edward Frank (M. D.), Harvard Medical School, Cambridge, Mass.; and Mr. Lewis E. Harris, Lincoln, Neb.

New York

New York City Association.—The regular meeting of the Veterinary Medical Association of New York City was held Wednesday, Feb.

6, 1957, at the New York Academy of Sciences, New York City.

The program consisted of a presentation on canine intraocular surgery by Dr. Hugh D. Simpson, Iowa State College, Ames.

North Carolina

Five Veterinarians Complete Short Course.

Five North Carolina practitioners have completed the first poultry disease short course for veterinarians held in North Carolina. Certificates were awarded at a dinner meeting on Dec. 3, 1956, by D. S. Weaver, director of the Agricultural Extension Service, to the following veterinarians: Rufus Marvin Bailey, Goldsboro; Thomas Benton Bruce, II, Raleigh; Bennett Lee Carraway, Weldon; Claybron Harold Gurley, Durham; and Martin Litwack, Raleigh.

Additional poultry disease short courses were planned for Hickory and Lexington, commencing in early February. Classes were limited to not more than eight veterinarians.

Eastern Association.—The Eastern North Carolina Veterinary Association met in Raleigh on Dec. 7, 1956. The following officers were elected for the ensuing year: E. L. Knox, Raleigh, president; B. H. Brow, Goldsboro, secretary-treasurer; and W. E. Plummer, Goldsboro, vice-president.

Piedmont Association Elects Officers.—The Piedmont Veterinary Medical Association has elected the following officers for the ensuing year: J. L. Innes, Asheville, president; John G. Martin, Boone, secretary-treasurer; and Harry Lind, Marion, vice-president.

Annual Conference for Veterinarians.—The nineteenth annual conference for veterinarians in North Carolina was held Jan. 23-25, 1957, at North Carolina State College, Raleigh.

Guest speakers included Joseph W. Beard, M.D., professor of surgery, Duke University Medical School, Durham, N. Car.; E. U. Dillard, Ph.D., assistant professor of animal industry, North Carolina State College; David E. Bartlett, D.V.M., American Breeders Service, Chicago, Ill.; Daniel DeCamp, D.V.M., New York City, N. Y.; R. W. Kirk, D.V.M., Cornell University, Ithaca, N. Y.; L. A. Burkey, Ph.D., Beltsville, Md.; C. E. DeCamp, D.V.M., New York City, N. Y.; Lee T. Railsback, D.V.M., Ellsworth, Minn.; and Mr. Wilbur Plager, National Swine Council, Des Moines, Iowa.

Ohio

State Board Examinations.—Ohio Veterinary Medical Examination, June 4-5, 1957. The examination will be conducted on June 4 and 5, 1957, in the Clinic Building, College of Veterinary Medicine, Ohio State University, Columbus. Applicants must be present at 8 a.m. on the first day.

Applicants may secure application forms from James R. Hay, Office of the Secretary Ex-Officio, Division of Animal Industry, Room 720, State Office Building, Columbus 15, Ohio. All application forms must be returned to the Secretary not later than May 4, 1957.

Oklahoma

State Association.—Officers elected at the annual meeting of the Oklahoma V.M.A. held in Oklahoma City, Jan. 13-15, 1957, are president, W. B. Griffin; president-elect, W. D. Speer; vice-president, J. B. Corcoran; secretary, M. N. Riemenschneider; and treasurer, W. K. Fauks.

A new constitution and bylaws of the Oklahoma V.M.A. were effectuated and Mrs. Larma Bennet, 2805 S. W. 51st St., Oklahoma City, was appointed executive secretary by the Executive Board.

Ontario

Ontario Auxiliary.—The twelfth annual meeting of the Women's Auxiliary to the Ontario Veterinary Association was held in the Royal York Hotel, Toronto, Ont., on Jan. 25-26, 1957, in conjunction with the Ontario Veterinary Association.

Friday morning was taken up with registration and renewing old friendships and making new ones. A luncheon was held at noon and we were very pleased to have as our guest speaker the president of the Women's Auxiliary to the American Veterinary Medical Association, Mrs. Alfred E. Coombs of Skowhegan, Maine. Friday evening, a banquet and dance were the main attractions.

A donation of \$25 was voted to the Ontario Student Loan Plan and \$50 to the C.V.M.A. Student Loan Plan; also \$10 to the AVMA Student Loan Fund and \$10 to the AVMA Research Fund.

Interesting reports were given by Mrs. Johnston on the C.V.M.A. convention in Montreal and by Mrs. Wright on the AVMA convention in San Antonio, Texas.

Mrs. Rumney was chosen as our delegate to the C.V.M.A. convention to be held in Vancouver and Mrs. R. H. Wright to the AVMA convention in Cleveland, Ohio.

S/KAY (MRS. ALLAN B.) RAEJOHN.

Pennsylvania

Dr. Easterbrooks Joins Faculty.—The University of Pennsylvania has announced the appointment of Dr. H. Lincoln Easterbrooks, Storrs, Conn., as associate professor of veterinary medicine in the School of Veterinary Medicine.

Dr. Easterbrooks will direct research and diagnostic programs, in addition to teaching, at New Bolton Center, located near Kennett Square, Pa.

Dr. Easterbrooks is a graduate of the Ohio

State University School of Veterinary Medicine and received the Master of Science degree from the University of Connecticut. From 1948 to 1955, he was a faculty member at the University of Connecticut. For the past 18 months, he has done research work for the American Cyanamid Company, with special reference to dairy cattle and enzyme therapy.

Virginia

State Association.—The sixtieth annual meeting of the Virginia V.M.A. was held at Richmond, Jan. 27-29, 1957.

Guest speakers included Dr. W. W. Armistead, president-elect of the AVMA, College Station, Texas; Dr. Robert Courter, U.S. Public Health Service, Atlanta, Ga.; Dr. F. J. Kingma, Abbott Laboratories, North Chicago, Ill.; and Dr. John L. McAuliff, Cortland, N. Y.

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Virginia Auxiliary.—The semiannual meeting of the Women's Auxiliary to the Virginia Veterinary Medical Association was held at the John Marshall Hotel in Richmond, Va., Jan. 27-29, 1957, with 45 members registered.

At this meeting, suggestions were offered for entertaining the women who will attend the meeting of the Southern Veterinary Medical Association to be held in Roanoke, Va., during October.

It was voted to contribute to the AVMA Research Fund, Library Fund, and Student Loan Fund.

The following officers were elected for the ensuing year: Mrs. J. D. Wittig, Portsmouth, president; Mrs. C. S. Milton, Winchester, vice-president; Mrs. I. I. Franklin, Arlington, secretary-treasurer; and Mrs. O. F. Foley, Harrisburg, historian.

S/LEAH B. (MRS. I. I.) FRANKLIN, Secretary.

U. S. GOVERNMENT

Veterinary Personnel Changes.—The following changes in the force of veterinarians in the U.S.D.A. are reported as of Jan. 31, 1957.

TRANSFERS

Gayle D. Allen, from Albuquerque, N. M., to El Paso, Texas.

Theodore M. Beard, from Denver, Colo., to Rapid City, S. Dak.

George H. Hines, from Chicago, Ill., to Greenville, Miss. Roman Jaskiw, from Topeka, Kan., to Worthington, Minn.

Walford J. Johnson, from Salt Lake City, Utah, to Sioux City, Iowa.

Charles J. Koerth, Jr., from Fort Worth, Texas, to Yakima, Wash.

Bill Parker, from Texas, Texas, to Butte, Mont.

Carl L. Rackliffe, from Carroll, Iowa, to Worthington, Minn.

Philip A. Ray, from Denver, Colo., to Sioux Falls, S. Dak.

Julian Sonewycky, from Bentonville, Ark., to Rogers, Ark.

Seidel M. Stephens, from San Francisco, Calif., to Woodland, Calif.

Donald D. Tolley, from Denver, Colo., to Watertown, S. Dak.

Willie J. Turner, from San Antonio, Texas, to West Ft. Smith, Okla.

Michael Warmesh, from Ames, Iowa, to Live Oak, Fla.
George E. Webb, from Athens, Ala., to Morton, Miss.

RETIREMENTS

William H. Lampe, Denver, Colo.

Earl J. Meixel, New Orleans, La.

Julius A. Skordahl, Walla Walla, Wash.

DEATHS

L. R. Montgomery, Worthington, Minn.

STATE BOARD EXAMINATIONS

NEW YORK—June 12-13, 1957. Practical examination, Ithaca. Mr. James O. Hoyle, secretary, 23 S. Pearl St., Albany. Week of July 8, 1957. Written examinations: New York City, Albany, Syracuse, Buffalo, Rochester.

NORTH CAROLINA—June 24-26, 1957. Asheville. Dr. James I. Cornwell, secretary, 65 Beverly Road, Beverly Hills, Asheville.

OHIO—June 4-5, 1957. Columbus. James R. Hay, Office of the Secretary Ex-Officio, Division of Animal Industry, Room 720, State Office Building, Columbus 15, Ohio.

TENNESSEE—June 24-25, 1957. Nashville. Dr. W. O. Greene, secretary, State Office Bldg., Nashville.

DEATHS

Star indicates member of AVMA

★**Fred R. Beaudette** (KSC '19), 59, chairman of the department of animal pathology at Rutgers University, New Brunswick, N.J., died in Memorial Hospital, New York City, Jan. 16, 1957, where he had been under treatment for several weeks.

Born in Wichita, Kan., April 15, 1897, Dr. Beaudette attended high school there before enrolling at Kansas State College. He was on the faculty at KSC until he joined the Rutgers staff in 1923 where he won successive promotions for his outstanding work in poultry pathology, and research in poultry diseases and their control. Among the accomplishments for which he received world-wide acclaim were vaccines against Newcastle disease and laryngotracheitis. In 1944, he won the Borden Award for his method of controlling the latter disease. In 1951, he received the Doctor of Science degree from Rutgers University.

Dr. Beaudette was a member of a number of professional and scientific societies, including the AVMA which he joined in 1935 and for whose JOURNAL he served as associate editor of poultry diseases for several years. He was also a member of the Poultry Science Association, Society of American Parasitologists, Microscopic Society, U. S. Livestock Sanitary Association, Conference of Research Workers in Animal Diseases, and the New York Academy of Sciences.

Surviving are his widow, the former Velva Rader, whom he married in 1922, three sons, his mother, and three brothers.

Cornelius Cann (CVC '91), 95, Frankfort, Ky., died Aug. 16, 1956. He is survived by his daughter and two grandchildren.

Franklin L. Foster (COR '06), 73, died Oct. 15, 1956, at Pico, Calif., after a prolonged illness. A native of Ohio, he was appointed veterinarian, BAI, U.S.D.A., Aug. 1, 1906. He served in that organization mostly at Buffalo, N. Y., until he moved to California shortly before retirement and lived there until the time of his death.

Walter A. Hahn (CVC '16), 61, died Dec. 25, 1956, at Geneva, Ill. Dr. Hahn was county veterinarian in Kane County, Ill. His widow survives.

George B. McKillip (MCK '08), 76, former Chicago veterinarian and son of the late founder of McKillip Veterinary College, died Jan. 30, 1957, in Evanston, Ill., from generalized carcinoma. He had conducted an active practice for 35 years prior to his retirement, confining his work to horses, and was veterinarian for the Illinois Racing Commission for a number of years. Following retirement, Dr. McKillip spent much of his time in Florida; he also had a home in Evanston, Ill.

One of seven children of Dr. M. H. McKillip who died in 1924, Dr. George assisted in his father's practice and served as secretary of the McKillip faculty from 1907 to 1920, when the school closed.

When World War I started, Dr. McKillip was commissioned major in the newly formed Veterinary Corps. He was assigned to the Surgeon General's Office for a time and was then ordered to Camp Lee to form one of three veterinary units for overseas duty. Major McKillip's unit, Veterinary Hospital No. 6, was the first complete hospital unit sent to France and was set up at Neufchateau. Later, he served as veterinary inspector general, Service of Supply. Major McKillip was also dean, for a time, of the veterinary school which was part of the "A.E.F. University," founded after the armistice in November, 1918, to provide activity for troops during the long wait for shipment home.

Dr. McKillip was active in the affairs of the Chicago Veterinary Medical Association in the early days. He joined the AVMA following graduation in 1908 and retained membership until 1936.

Funeral services were conducted in Evanston and interment was in the family plot at Rose Hill cemetery. Surviving are two nieces and three nephews; his wife died in 1954.

Among bequests Dr. McKillip made from a large estate was a donation of \$10,000 to the AVMA Research Fund.

Paul A. Mollan (CVC '07), 72, Libertyville, Ill., died Jan. 1, 1957. He is survived by his widow.

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ORGANIZATION SECTION

Cleveland Is 1957 Convention City *Ninety-Fourth Annual Meeting—Aug. 19-22, 1957*

Committee on Local Arrangements Selected—Housing Bureau Will Handle Hotel Reservations

Cleveland, known as the Queen City of the Lakes, will be the site of the 1957 annual sessions of the AVMA. A port city on Lake Erie, it is the gateway through which the ore and wheat of the Middle West passes to the factory cities of the east. It is also a main stop on the east-west rail and highway network of the nation.

Minneapolis, another midwestern city and site of the 1955 Convention, was host to 3,700 veterinarians. Cleveland, too, is a midwestern city surrounded by rich agricultural areas supporting a large veterinary population. By reason of its convenient location to a large number of veterinarians and an increasing awareness among professional men for a strong, representative organization, attendance is expected to go over the 4,000 mark this year.

LOCAL COMMITTEE ORGANIZED

Veterinarians selected by the host organization, the Ohio State Veterinary Medical Association, got a start on some of their convention plans as early as November of last year, the month following the San Antonio meeting.

Committee on Local Arrangements

OFFICERS

Co-General Chairman—Dr. H. B. Roberts, Cleveland.

Co-General Chairman—Dr. H. E. Jensen, Cleveland.

General Secretary—Dr. R. W. Grundish, Willoughby.

Ex-Officio—Dr. W. R. Krill, Columbus.

Ex-Officio—Dr. R. E. Rebrassier, Columbus.

COMMITTEE CHAIRMAN

Alumni Dinners—Dr. R. W. Stockwell.

Entertainment—Dr. R. D. Larcey.

Exhibits—Dr. A. J. Sirilo.

Golf Tournament—Dr. Franklin Gruesser.

Hospitality and Reception—Dr. D. A. Rickards.

Hotel, Housing, Garages, Airports, and Transportation—Dr. J. W. Ralston.

Meeting Rooms and Equipment—Dr. R. E. Jacobs.

Publicity and Public Relations—Dr. C. C. Wagner.

Registration and Information—Dr. W. E. Wendt.

Television—Dr. F. A. Coy.

Women's Activities

Chairman—Mrs. H. E. Jensen.

Vice-Chairman—Mrs. H. B. Roberts.

Secretary—Mrs. W. W. Hafenbrack.

Tea—Mrs. D. O. Rickards.

Luncheon—Mrs. J. Lyman, Jr.

Teenagers—Mrs. F. A. Coy.

Sub-Teenagers—Mrs. R. I. Fisher.

HOUSING BUREAU TO HANDLE HOTEL RESERVATIONS

The Cleveland Convention and Visitors Bureau will operate a housing service in cooperation with the Local Committee. This service will receive all requests for reservations, process them, and confirm them. A special form for reservations is published in this issue (adv. p. 55) of the JOURNAL and will appear in succeeding issues for several months.

MUNICIPAL AUDITORIUM WILL HOUSE SESSIONS

Cleveland's Municipal Auditorium will provide ample room for all scientific sessions of the ninety-fourth meeting. The building is air-conditioned, too.

HOTELS

There are seven downtown hotels in Cleveland. The Cleveland Hotel will be the headquarters hotel, and the preconvention sessions will be held there. The Auditorium Hotel is directly across the street from the Cleveland Auditorium, while the Carter, Cleveland, Hollender, Manger, Olmsted, and Statler hotels are located within a 1-mile radius.

CLEVELAND

The city itself boasts 32 parks and parklands following the picturesque valley of Doan Brook, along the eastern border of the city, and the lake-front. Teen and subteen activities are being planned to take advantage of the recreational facilities of these parks to assure veterinarians that their families will enjoy the convention.

Additional information on the 1957 meeting will appear in subsequent issues of the JOURNAL.

Television Program on Blood

On Wednesday, March 20, the Bell Telephone System will present "Hemo the Magnificent" over the CBS television network at 8 p.m. CST. This program deals with the blood and its circulation and was produced by Frank Capra.

The showing should be of particular interest to AVMA members.

STUDENT CHAPTER ACTIVITIES

Colorado Student Chapter.—Dr. Harold Hill was the guest speaker at the meeting of the Colorado A. & M. College Student Chapter to the AVMA held Jan. 23, 1957. Dr. Hill gave an illustrated talk of his recent trip to France



- 1—Auditorium Hotel 4—Hollenden Hotel
2—Carter Hotel 5—Manger Hotel
3—Cleveland Hotel 7—Statler Hotel

(6—Olmsted Hotel picture not available)



Executive Board Action on Penicillin in Milk

The AVMA Executive Board held its semiannual meeting in Chicago on Feb. 22-23, 1957.

One of the actions taken by the Board of immediate interest to AVMA members was the formulation and adoption of the following letter which pertains to products containing penicillin intended for intramammary infusion.

February 22, 1957

Hearing Clerk,

Department of Health, Education, and Welfare,
Room 5440, 330 Independence Ave., S. W.,
Washington 25, D.C.

Dear Sir:

The following is the expression of the Executive Board of the American Veterinary Medical Association with reference to the notice of proposed amendment "Penicillin and Penicillin-Containing Drugs Intended for Use by the Intramammary Route," appearing in the February 9 issue of the *Federal Register*, establishing 100,000 units of penicillin as the maximum single dose in preparations intended for use in the treatment of mastitis administered by the intramammary route.

We wish to support the objectives contemplated through the amendment, but call attention to our firm belief that the amendment, as proposed, will not only fail to accomplish the objectives, but will serve as a deterrent to mastitis control programs.

With your permission, we wish to comment on each of the "statements of fact" contained in the announcement as the basis for the proposed regulations:

1) That substantial quantities of penicillin are used in the treatment of mastitis in milk-producing animals is an established fact.

Economy, efficacy and availability are primary factors in making penicillin the agent of choice for mammary infusion.

However, low cost and unrestricted availability have resulted in flagrant abuses of the use of a product previously intended as a veterinary therapeutic agent. In fact, the control of mastitis has been impeded through the sole dependence of livestock owners upon antibiotics infusion to control mastitis.

Veterinarians have repeatedly demonstrated that mastitis can be effectively controlled through an intelligent preventive program of which treatment with antibiotics is only one part. As long as preparations containing antibiotics intended for the treatment of mastitis are made available through channels of trade outside the immediate supervision of veterinarians, penicillin and other antibiotic residues will continue to be found in market milk, irrespective of the maximum dose permitted.

2) The finding of penicillin or other antibiotics in market milk or any other food intended for human consumption illustrates the inconsistency of the broad exemptions granted certain drugs when

they are intended for animal use. The end-product of livestock production is food for human consumption.

Therefore, when it is found that there is a possibility of residues of drugs becoming an integral part of the diet because of their use in animals, the drugs should be restricted to use under the supervision of a licensed veterinarian. Only through the restriction of these products to professional use can their use be controlled.

3) The determination of the adequate dose of a therapeutic agent must be the decision of the clinician who has full knowledge of the case. The veterinary clinician, through differential diagnosis and the use of adjuvant therapy of a parenteral nature, rarely exceeds the 100,000-unit dosage suggested.

On the other hand, untrained persons are prone to accept the philosophy of multiple doses, especially when constantly encouraged by advertising and sales promotion.

Veterinarians have found repeatedly that when an intelligent preventive program of mastitis control is followed, the needs for intramammary antibiotic medication decreases substantially after the initial phases of the program.

4) The fourth fact enumerated in the notice registers doubt that the proposed amendment will accomplish its objective.

This fact is no less important than the others.

To avoid the enactment of a regulation that serves no useful purpose, we respectfully suggest that the proposed amendments to 21 CFR, Parts 146a, 146b, 146c, 146d, 146e, establishing 100,000 units of penicillin as the maximum single dose in preparation intended for use in the treatment of mastitis in milk-producing animals and administered by the intramammary route, be further amended to:

a) Restrict the use of all antibiotic drugs administered by the intramammary route to licensed veterinarians for use in the course of his professional practice, and

b) require the mandatory addition of an innocuous dye to any antibiotic that is to be packaged for mastitis treatment in order that an antibiotic could be detected in the milk within 72 hours of udder infusion.

Respectfully,
AMERICAN VETERINARY MEDICAL
ASSOCIATION
T. Lloyd Jones, *Chairman*
Executive Board.

Places and Dates of Future AVMA Conventions

1957—Cleveland, Ohio . . . August 19-22.

1958—Philadelphia, Pa. . . . August 18-21.

1959—Kansas City, Mo. . . . August 24-27
(jointly with Third Pan American Veterinary Congress).

1960—Denver, Colo. . . . dates to be set.

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- ★ REDUCE EARLY MORTALITY UP TO 20%

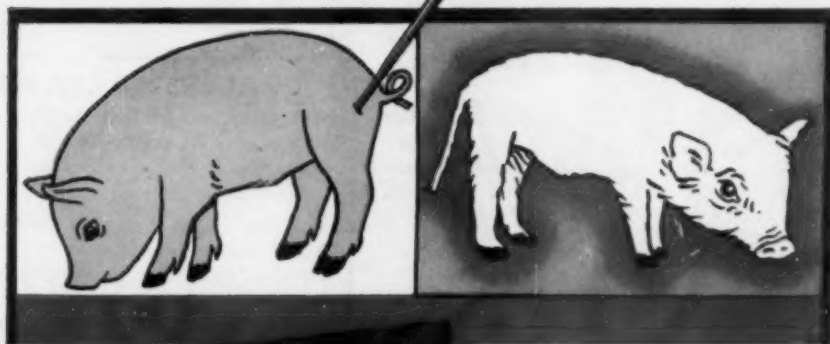


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S/DICK PARSLEY, *Secretary*.

Illinois

Illinois Chapter.—During the recently completed semester at the University of Illinois, the student chapter to the AVMA held the following meetings and activities:

In September, 1956, a freshman welcome was held with Dean Brandly speaking about the organization of the AVMA.

During October, Dr. George Woods, extension veterinarian at the University, presented an illustrated talk on his recent tour of duty with the USAF Veterinary Corps.

Dr. L. E. Fisher, Berwyn, Ill., was guest speaker at the Nov. 1 meeting and spoke to the group on some aspects of a small animal practice and zoo practice. Dr. Fritz Sevelius, Sweden, was the guest speaker on November 15, when he briefly discussed the veterinary profession in Sweden. Dr. Sevelius also presented slides and films of veterinary interest to the group.

Dr. Lyle Boley, field representative for Cutter Laboratories, was the speaker for the December 6 meeting and, on Jan. 10, 1957, Dr. Henry Brouwer, Leland, Ill., presented a talk to the Chapter on veterinary ethics.

The following officers were elected: Gale Taylor, president; Paul Trovillon, president-elect; Benton Allen, vice-president; Richard Schiltz, secretary; and Charles Anderson, treasurer.

S/ALBERT KOLTVEIT, *Secretary*.

Iowa Chapter.—The ninth annual fall banquet of the Iowa State College Student Chapter to the AVMA was held at Memorial Union, Oct. 3, 1956. More than 260 divisional students and faculty members attended.

Dr. J. H. Jensen, provost, Iowa State College, welcomed the first year students to the Division of Veterinary Medicine and to Iowa State College.

Dean I. A. Merchant introduced the veterinary medical staff and other staff members.

Dean A. H. Groth of the College of Veterinary Medicine, University of Missouri, talked on "Veterinary Colleges in the World Today."

The Borden Scholarship award for an outstanding scholastic record was presented to David E. Tyler, a senior at Iowa State College.

WOMEN'S AUXILIARY

President—Mrs. A. E. Coombs, Box 174, Skowhegan, Maine
Secretary—Mrs. F. R. Booth, 3920 E. Jackson Blvd., Elkhart, Ind.

Greetings from Bikaner, India, in the Heart of the Great Indian Desert.—How I wish you might all sit with me on the veranda of the State Hotel where we live, and watch the colorful procession that passes all day long. It is

like living a chapter from the "Arabian Nights." Our magic carpet has dipped down to so many wonderful places since we flew away from Columbus into the "wide blue yonder" on June 13, 1956, that it is difficult to realize that we are really 10,000 miles from our beloved U.S.A.

We are the only Americans in this city of 350,000 but, although we are objects of great curiosity, we are treated with respect and consideration.

Dr. Grossman is doing wonderful work here at the Rajasthan College of Veterinary Science and Animal Husbandry, and they are so appreciative and cooperative. The government of India is sponsoring a seminar here this week and next, which the anatomists of the 14 veterinary colleges of India are attending to learn about embalming and dissection techniques. It was inaugurated on Dec. 10, 1956, by the Minister of Agriculture of India, and there were 500 present.

Without doubt, our Veterinary College is the most beautiful and ornate in the world, for it is the Bijay Bhawan Palace, the princely estate of a former maharajah. The buildings are of exquisitely carved red sandstone and marble.

We go to Calcutta on January 1 for six months, and then back to our home in the desert for a year.

S/(MRS. JAMES D.) LUCILE C. GROSSMAN.

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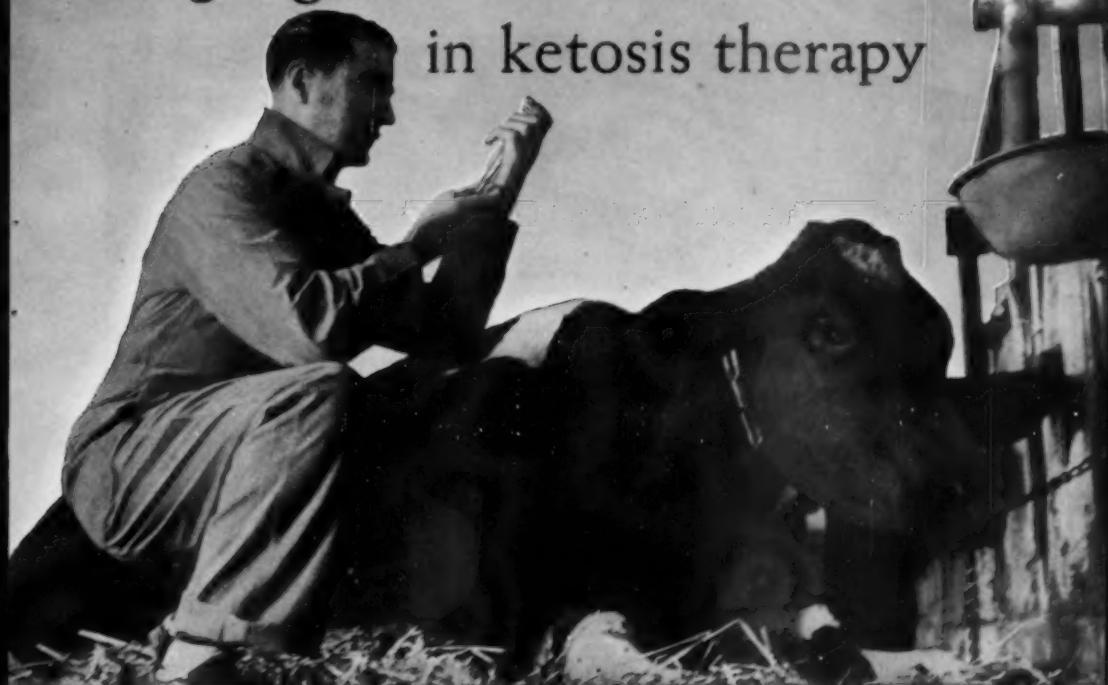
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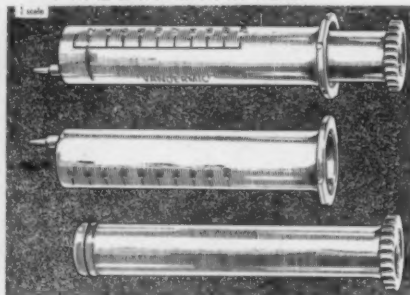


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COMING MEETINGS

Central Canada Veterinary Association. Annual meeting. Brockville, Ont., March 15-16, 1957. C. K. Hetherington, 631 Edison Ave., Ottawa, Ont., secretary.

Alabama Veterinary Medical Association. Annual meeting. Lyons Hotel, Decatur, March 17-19, 1957. M. K. Heath, Alabama Polytechnic Institute, Auburn, secretary.

Washington, State College of. Annual conference for veterinarians. Pullman, Wash., April 8-10, 1957. Ray E. Warts, conference secretary.

Animal Disease Workers in the Southern States. Annual meeting. Louisiana State University, Baton Rouge, April 11-12, 1957. Leonard Reid Davis, U.S.D.A., Regional Animal Disease Research Laboratory, Auburn, Ala., secretary.

American Animal Hospital Association. Annual meeting. Sheridan Palace Hotel, San Francisco, Calif., May 8-11, 1957. W. H. Riser, 5335 Touhy Ave., Skokie, Ill., secretary.

Kansas State College. Conference for veterinarians. School of Veterinary Medicine, Manhattan, May 26-28, 1957. E. E. Lesure, dean.

Texas A. & M. College. Conference for veterinarians. Texas A. & M. College, College Station, June 6-7, 1957. R. D. Turk, chairman.

North Dakota Veterinary Medical Association. Annual meeting. Minot, N. Dak., June 17-18, 1957. Dean Flagg, 202 Teton Ave., Bismarck, N. Dak., secretary.

Alberta Veterinary Medical Association. Annual convention. June 21-22, 1957. H. C. Carlson, 9324 148th St., Edmonton, Alta., secretary.

North Carolina Veterinary Medical Association. Annual meeting. Grove Park, Asheville, June 25-27, 1957. C. J. Lange, 3741 High Point Rd., Greensboro, N. Car., secretary.

Kentucky Veterinary Medical Association. Annual meeting. Brown Hotel, Louisville, July 15-16, 1957. Robert H. Singer, 136 Shawnee Place, Lexington, Ky.

Canadian Veterinary Medical Association. Annual meeting. Hotel Georgia, Vancouver, B. C., July 22-24, 1957. James Archibald, Ontario Veterinary College, Guelph, Ont., vice-president.

American Veterinary Medical Association. Annual meeting. Cleveland Auditorium, Cleveland, Ohio, Aug. 19-22, 1957. J. G. Hardenbergh, 600 S. Michigan Ave., Chicago 3, Ill., executive secretary.

New England Veterinary Medical Association. Annual meeting. Equinox House, Manchester, Vt., Oct. 6-9, 1957. C. Lawrence Blakely, 180 Longwood Ave., Boston, Mass., secretary.

Southern Veterinary Medical Association. Annual meeting. Hotel Roanoke, Roanoke, Va., Oct. 27-30, 1957. A. A. Husman, P. O. Box 91, Raleigh, N. Car., secretary.

Cornell University. Nutrition conference. Cornell University, Ithaca, N.Y., Oct. 31-Nov. 1, 1957. J. K. Loosli, Stocking Hall, Cornell University, Ithaca, N.Y., chairman.

The term "caesarean" has no relation to Julius Caesar; it derives from the Latin past participle "caesus" from "caedere" meaning to cut.—*J.A.M.A.*, Jan. 12, 1957.

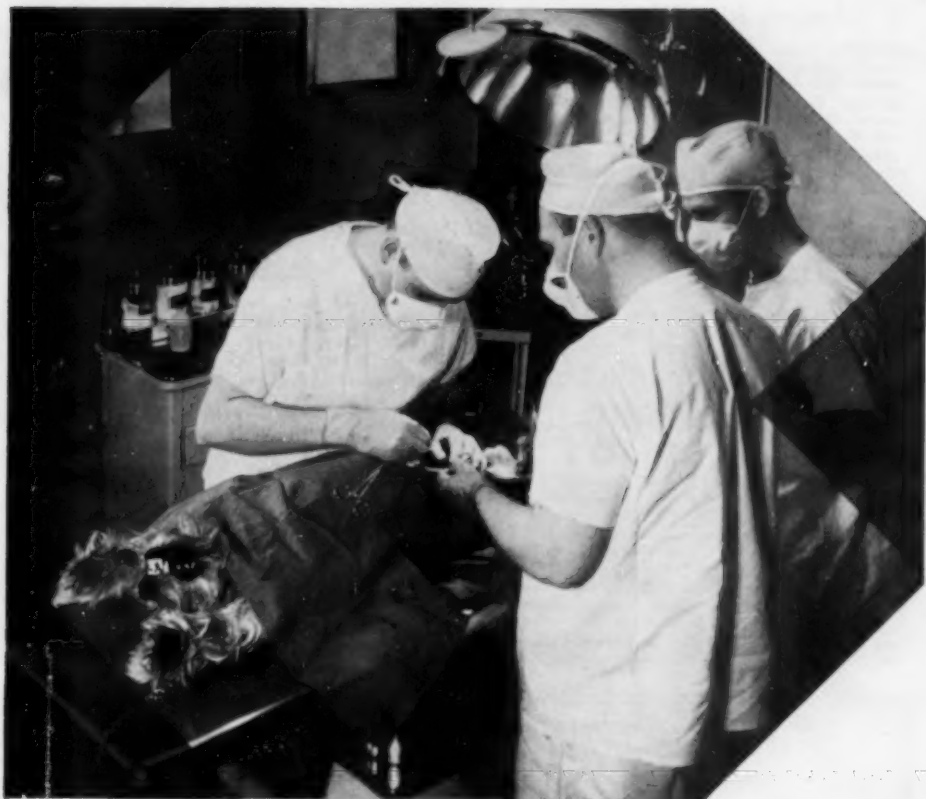


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tive procedure. Recovery is safe, with virtually no side effects. And animals remain quiet several hours after operation.

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Regularly Scheduled Meetings

ALABAMA—Central Alabama Veterinary Association, the first Thursday of each month. B. M. Lauderdale, Montgomery, secretary.

Jefferson County Veterinary Medical Association, the second Thursday of each month. S. A. Price, 213 N. 15th St., Birmingham, secretary.

Mobile-Baldwin Veterinary Medical Association, the first Tuesday of each month. W. David Gross, 771 Holcombe Ave., Mobile, Ala., secretary.

ARIZONA—Central Arizona Veterinary Medical Association, the second Tuesday of each month. Keith T. Maddy, Phoenix, Ariz., secretary.

Southern Arizona Veterinary Medical Association, the third Wednesday of each month at 7:30 p.m. E. T. Anderson, Rt. 2, Box 697, Tucson, Ariz., secretary.

CALIFORNIA—Alameda Contra Costa Veterinary Medical Association, last Wednesday of each month. Leo Goldston, 3793 Broadway, Oakland 11, Calif., secretary.

Bay Counties Veterinary Medical Association, the second Tuesday of each month. E. Paul, Redwood City, Calif., secretary.

Central California Veterinary Medical Association, the fourth Tuesday of each month. R. B. Barsaleau, 2333 E. Mineral King, Visalia, Calif., secretary.

Kern County Veterinary Medical Association, the first Thursday evening of each month. A. L. Irwin, 301 Taft Highway, Bakersfield, Calif., secretary.

Mid-Coast Veterinary Medical Association, the first Thursday of every even month. W. H. Rockey, P. O. Box 121, San Luis Obispo, Calif., secretary.

Monterey Bay Area Veterinary Medical Association, the third Wednesday of each month. Lewis J. Campbell, 90 Corral de Tierra, Salinas, Calif., secretary.

North San Joaquin Valley Veterinary Medical Association, the fourth Wednesday of each month at the Hotel Co-

vell, in Modesto, Calif. Lyle A. Baker, Turlock, Calif., secretary.

Orange Belt Veterinary Medical Association, the second Monday of each month. Chester A. Maeda, 766 E. Highland Ave., San Bernardino, Calif., secretary.

Orange County Veterinary Medical Association, the third Thursday of each month. Donald E. Lind, 2643 N. Main St., Santa Ana, Calif., secretary.

Peninsula Veterinary Medical Association, the third Monday of each month. T. D. Harris, San Mateo, Calif., secretary.

Redwood Empire Veterinary Medical Association, the third Thursday of each month. Robert E. Clark, Napa, Calif., secretary.

Sacramento Valley Veterinary Medical Association, the second Wednesday of each month. W. E. Steinmetz, 4227 Freepoint Blvd., Sacramento, Calif., secretary.

San Diego County Veterinary Medical Association, the fourth Tuesday of each month. H. R. Rosoli, 1795 Moore St., San Diego, Calif., secretary.

San Fernando Valley Veterinary Medical Association, the second Friday of each month at the Casa Escobar Restaurant in Studio City. John Chudacoff, 7912 Sepulveda Blvd., Van Nuys, secretary.

Santa Clara Valley Veterinary Association, the fourth Tuesday of each month. Kay Beulley, N. Fourth and Gish Rd., San Jose, Calif., secretary.

Southern California Veterinary Medical Association, the last Wednesday of each month. Don Mahan, 1919 Wilshire Blvd., Los Angeles 57, Calif., executive secretary.

Tulare County Veterinarians, the second Thursday of each month. R. B. Barsaleau, 2333 E. Mineral King, Visalia, Calif., secretary.

COLORADO—Denver Area Veterinary Society, the fourth Tuesday of every month. Richard C. Tolley, 5060 S. Broadway St., Englewood, Colo., secretary.

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Northern Colorado Veterinary Medical Society, the first Monday of each month. M. A. Hammariund, School of Veterinary Medicine, Colorado A. & M. College, Fort Collins, Colo., secretary.

DELAWARE—New Castle County Veterinary Association, the first Tuesday of each month at 9:00 p.m. in the Hotel Rodney, Wilmington, Del. E. J. Hathaway, Clifton Park Manor, Apt. 73-5, Wilmington 2, Del., secretary.

FLORIDA—Central Florida Veterinary Medical Association, the second Friday of each month, time and place specified monthly. James B. Murphy, Eustis, Fla., secretary.

Jacksonville Veterinary Medical Association, the second Thursday of each month, time and place specified monthly. George F. Yopp, 6444 Main St., Jacksonville, Fla., secretary.

Northwest Florida Veterinary Medical Society, third Wednesday of each month, time and place specified monthly. Harold A. Tennant, Atmore, Ala., secretary.

Palm Beach Veterinary Society, the last Thursday of each month in the county office building at 810 Datura St., West Palm Beach. Ross E. Evans, 5215 S. Dixie Highway, West Palm Beach, Fla., secretary.

Ridge Veterinary Medical Association, the fourth Thursday of each month in Bartow, Fla. Paul J. Myers, Winter Haven, Fla., secretary.

South Florida Veterinary Society, the third Tuesday of each month, at the Seven Seas Restaurant, Miami, Fla. E. D. Stoddard, 6432 S. W. 8th St., Miami, Fla., secretary.

Suwannee Valley Veterinary Association, the third Friday of each month, at the Thomas Hotel, Gainesville, Fla. R. C. Mann, Rt. 1, Box 37, Ocala, Fla., secretary.

Volusia County Veterinary Medical Association, the fourth Thursday of each month. A. E. Hixon, 131 Mary St., Daytona Beach, Fla., secretary.

GEORGIA—Atlanta Veterinary Society, the second Tues-

day of every month at the Elks Home on Peachtree St., Atlanta, Ga. J. L. Christopher, Smyrna, Ga., secretary.

ILLINOIS—Chicago Veterinary Medical Association, the second Tuesday of each month. Mark E. Davenport, Jr., 215 S. Edgewood Ave., LaGrange, Ill., secretary.

Eastern Illinois Veterinary Medical Association, the first Thursday of March, June, September, and December. A one-day clinic is held in May. H. S. Bryan, College of Veterinary Medicine, University of Illinois, Urbana, secretary.

INDIANA—Central Indiana Veterinary Medical Association, the second Wednesday of each month. Peter Johnson, Jr., 4410 N. Keystone Ave., Indianapolis 5, secretary.

Michiana Veterinary Medical Association, the second Thursday of every month except July and December, at the Hotel LaSalle, South Bend, Ind. J. M. Carter, 3421 S. Main St., Elkhart, Ind., secretary.

Tenth District Veterinary Medical Association, the third Thursday of each month. J. S. Baker, P. O. Box 52, Pendleton, Ind., secretary.

IOWA—Cedar Valley Veterinary Association, the second Monday of each month, except January, July, August, and October, at Black's Tea Room, Waterloo, Iowa. H. V. Henderson, Reinbeck, Iowa, secretary.

Coon Valley Veterinary Association, the second Wednesday of each month, September through May, at the Bradford Hotel, Storm Lake, Iowa. D. I. Lee, Sac City, Iowa, secretary.

Fayette County Veterinary Association, the third Tuesday of each month, except in July and August, at Pa and Ma's Restaurant, West Union, Iowa. Donald E. Moore, Box 178, Decorah, Iowa, secretary.

Northeast Iowa-Southern Minnesota Veterinary Association, the first Tuesday of February, May, August, and November at the Wineslick Hotel, Decorah, Iowa, 6:30 p.m. Donald E. Moore, Box 178, Decorah, Iowa, secretary.

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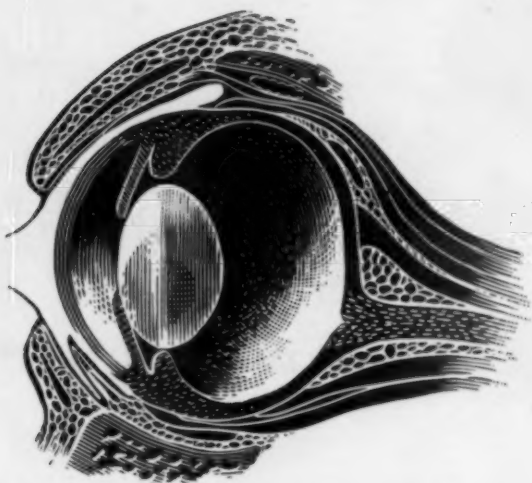
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KENTUCKY—Central Kentucky Veterinary Medical Association, the first Wednesday of each month. L. S. Shirrell, Versailles Rd., Frankfort, secretary.

Jefferson County Veterinary Society of Kentucky, Inc., the first Wednesday evening of each month in Louisville or within a radius of 50 miles. W. E. Bewley, P.O. Box "H," Crestwood, secretary.

MARYLAND—Baltimore City Veterinary Medical Association, the second Thursday of each month, September through May (except December), at 9:00 p.m. at the Park Plaza Hotel, Charles and Madison St., Baltimore, Md. Harry L. Schultz, Jr., 9011 Harford Rd., Baltimore, Md., secretary.

MICHIGAN—Mid-State Veterinary Medical Association, the fourth Thursday of each month with the exception of November and December. Robert E. Kader, 5034 Armstrong Rd., Lansing 17, Mich., secretary.

Saginaw Valley Veterinary Medical Association, the last Wednesday of each month. S. Correll, Rt. 1, Midland, Mich., secretary.

Southeastern Veterinary Medical Association, the fourth Wednesday of every month, September through May. Gilbert Meyer, 14003 E. Seven Mile Rd., Detroit 5, Mich., secretary.

MISSOURI—Greater St. Louis Veterinary Medical Association, the first Friday of each month (except July and August) at the Sberaton Hotel, Spring Ave. and Lindell Blvd. Allen B. Shopmaker, 136 N. Meramec, Clayton 5, Mo., secretary.

Kansas City Small Animal Hospital Association, the first Monday of each month, at alternating hospitals. W. F. Noland, 7504 Metcalf, Overland Park, Kan., secretary.

Kansas City Veterinary Medical Association, the third Tuesday of each month at Exchange Hall, ninth floor, Livestock Exchange Bldg., 1600 Genessee St., Kansas City, Mo. Busch Meredith, 800 Woodswether Rd., Kansas City 5, Mo., secretary.

NEW JERSEY—Central New Jersey Veterinary Medical Association, the second Thursday of November, January, March, and May at Old Hights Inn, Hightstown, N. J. David C. Tudor, Cranbury, N. J., secretary.

Metropolitan New Jersey Veterinary Medical Association, the third Wednesday evening of each month from October through April at the Academy of Medicine, 91 Lincoln Park South, Newark, N. J. Myron S. Arlein, 2172 Milburn Ave., Maplewood, N. J., secretary.

Northern New Jersey Veterinary Association, the fourth Tuesday of each month at the Casa Mana in Teaneck. James R. Tanzola, Upper Saddle River, secretary.

Northwest Jersey Veterinary Society, the third Wednesday of every odd month. F. B. Duke, 49 Taylor St., High Bridge, N. J., secretary.

Southern New Jersey Veterinary Medical Association, the third Tuesday of each month at the Collingswood Veterinary Hospital, Collingswood. W. E. Snyder, E. Kings Highway and Munn Ave., Haddonfield, secretary.

NEW YORK—New York City, Inc., Veterinary Medical Association of, the first Wednesday of each month at the New York Academy of Sciences, 2 East 63rd St., New York City. C. E. DeCamp, 43 West 61st St., New York 23, N. Y., secretary.

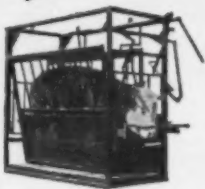
Monroe County Veterinary Medical Association, the first Thursday of even-numbered months except August. Irwin Bircher, 30 University Ave., Rochester, N. Y., secretary.

NORTH CAROLINA—Central Carolina Veterinary Medical Association, the second Wednesday of each month at 7:00 p.m. in the O'Henry Hotel, Greensboro. Joseph A. Lombardo, 411 Woodlawn Ave., Greensboro, secretary.

Eastern North Carolina Veterinary Medical Association, the first Friday of each month. Wm. Allen Potts, 401 W. James St., Mount Olive, secretary.

Piedmont Veterinary Medical Association, the last Friday of each month. John G. Martin, Boone, N. Car., secretary.

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W W CATTLE CHUTE

- The Chute with a Side Exit
- Left or Right Side Brand
- Automatic Head Adjuster
- Also Calf Cradles, Corals, Feeder Bunks, and Truck Racks for Pickups

Dealers Wanted
W W CATTLE CHUTE COMPANY
— Dodge City, Kansas

The World's Finest Cattle Handling Equipment

OHIO—Cuyahoga County Veterinary Medical Association, the first Wednesday of each month, September through May (except January), at 9:00 p.m. at the Carter Hotel, Cleveland, Ohio. Ed. R. Jacobs, 5522 Pearl Rd., Cleveland, Ohio, secretary.

OKLAHOMA—Oklahoma County Veterinary Medical Association, the second Wednesday of every month. James M. Brown, 2818 W. Britton Rd., Oklahoma City, secretary.

Tulsa Veterinary Medical Association, the third Thursday of each month in Directors' Parlor of the Brookside State Bank, Tulsa, Okla. Don L. Hohmann, 538 S. Madison St., Tulsa, Okla., secretary.

PENNSYLVANIA—Keystone Veterinary Medical Association, the fourth Wednesday of each month at the University of Pennsylvania School of Veterinary Medicine,

39th and Woodland Ave., Philadelphia 4, Pa. Raymond C. Snyder, 39th and Woodland Ave., Philadelphia 4, Pa., secretary.

SOUTH CAROLINA—Piedmont Veterinary Medical Association, the third Wednesday of each month at the Fairforest Hotel, Union, S. Car. Worth Lanier, York, S. Car., secretary.

TEXAS—Coastal Bend Veterinary Association, the second Wednesday of each month. J. Marvin Prewitt, 4141 Lexington Blvd., Corpus Christi, Texas, secretary.

VIRGINIA—Central Virginia Veterinarians' Association, the third Thursday of each month at the William Byrd Hotel in Richmond at 8:00 p.m. M. R. Levy, 312 W. Cary St., Richmond 20, Va., secretary.

Northern Virginia Veterinary Society, the second Wednesday of every third month. Meeting place announced by letter. H. C. Newman, Box 145, Merrifield, secretary.

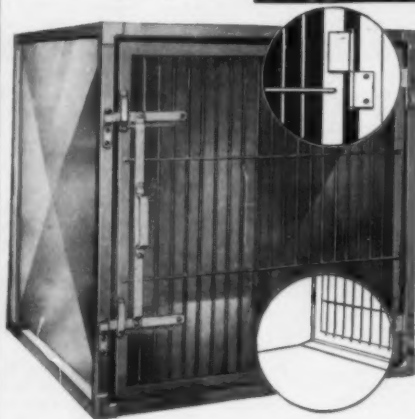
Southwest Virginia Veterinary Medical Association, the first Thursday of each month. I. D. Wilson, Blacksburg, secretary.

WASHINGTON—Seattle Veterinary Medical Association, the third Monday of each month, Magnolia American Legion Hall, 2870 32nd W., Seattle, Wash. William S. Green, 9637 S. E. 36th, Mercer Island, Wash., secretary. South Puget Sound Veterinary Association, the second Thursday of each month except July and August. O. L. Bailey, P. O. Box 906, Olympia, Wash., secretary.

WEST VIRGINIA—Kyowa (Ky., Ohio, W. Va.) Veterinary Medical Association, the second Thursday of each month in the Hotel Prichard, Huntington, W. Va., at 8:30 p.m. Harry J. Fallon, 200 5th St., W. Huntington, W. Va., secretary.

WISCONSIN—Milwaukee Veterinary Medical Association, the third Tuesday of each month, at the Half-Way House, Blue Mound Rd. George F. Lynch, 201 West Devon St., Milwaukee 17, Wis., secretary.

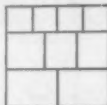
Sani-Cage is Unquestionably the Finest!



Here's Why:

- Heavy gauge stainless steel throughout, of surgical instrument quality; bright, smooth finish, no place for bacteria to lodge.
- Doors can't bend out of shape; readily lifted off for cleaning; positive locking double latch.
- Lip across front of cage, slightly higher than floor of cage, prevents runoff.
- Easy to install—no maintenance cost. Finest craftsmanship throughout.
- Can be arranged in tiers for complete ward room installations.
- Relatively low priced considering high quality. Satisfaction guaranteed or money refunded.
- Send for Literature, Prices, and Names of Users. Dealer Inquiries Invited.

Can be tiered
and banded.



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No.	Ht.	Wth.	Depth.
SSL-1	20"	20"	28"
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SSL-3	24"	30"	28"
SSL-4	30"	30"	28"
SSL-5	30"	36"	28"
SSL-6	30"	48"	28"
SSL-7	36"	36"	28"
SSL-8	36"	48"	28"

Sani-Cage

6815 STONY ISLAND AVE., CHICAGO 49, ILL. DISTRIBUTING CO.

in ketosis

the way it was

"This continues to be an important problem to the veterinarian in dairy cattle practice. Some years ago, it appeared to be primarily a disturbance of such a nature that the body was unable to metabolize the fats—more carbohydrate was needed, more ready energy. Many cases responded to glucose intravenously, supported by the feeding of cane molasses or corn syrup. Others responded when chloral hydrate was administered, its effects being to liberate the glycogen stored in the liver.

"There were, however, cases which did not respond to treatment of this nature, but did improve markedly when anterior

pituitary extract was injected. This still did not produce the desired result in all cases, and massive doses of vitamin A were administered. Results were spectacularly good in some cases, but dismally poor in others. When treatment can be accompanied by a change to new pasture, remarkable recoveries may be seen, but obstinate cases still occur in animals that are pasturing on lush green legumes.

"So the search for the underlying cause, and for a means of preventing or correcting the condition, still goes on."

Report of the Committee on Diseases of Dairy Cattle, R. C. Klusendorf, Chairman, J.A.V.M.A., 107:355 (Nov.) 1945.

1945

A PRACTITIONER

...served with great success in a case of a complete failure in another year ago, it was felt that much more massive dosages might be required in treating these cases. In other words, many cases of acetonaemia are an excellent pasture disease and are not on a low plane.

I have heard that I take care of a lot of cases in 12 cases of acetonaemia, and have days after making an attempt to feeding corn silage. Many cases took a long time to make a cure.

Other times, acetonaemia will develop suddenly after a heat period, and will be excessive exercise. Therefore, it is constantly on the lookout for signs when called to see a sick cow. Some times there may be some indication that needs treatment for acetonaemia.

When I first started to practice I administered every cow that I suspected of this disease. This, I believe, served no purpose. First, it made a bad impression on the client for a veterinarian run an on-the-spot diagnosis. Second, it served as an aid to the owner when he was in doubt as to the disease. However, one still has to be certain that a positive Rose test is not a sign of acetonaemia rather than a reaction to some other disturbance such as metritis.

During this time, I noticed that in many cases of acetonaemia, I thought perhaps I should

the way it is

"There appears to be general agreement among those who have studied the disease (primary ketosis) that prompt stimulation of glycogenesis or glucose therapy constitutes the most effective treatment... The satisfactory response of a high percentage of cows treated with 100 mg. prednisolone indicates

that this is adequate dosage. Less severely affected cows may require only 50 mg. It is, therefore, effective in lower dosage than other presently available glucocorticoids recommended for treatment of ketosis."

1946, R. P. J. Pearson, D. L., and Huber, W. G.: Paper presented at 52nd Annual Meeting, J.A.V.M.A., Oct. 15-18, 1956, San Francisco, Calif.

1957

STERANE

INTRAMUSCULAR

For prompt, efficient and economical treatment of bovine ketosis and other stress conditions.

Available in vials of 10 cc.; 10 mg. of prednisolone per cc.

Pfizer

Department of Veterinary Medicine, PFIZER LABORATORIES, Division, Chas. Pfizer & Co., Inc., Brooklyn 6, N. Y.

Star Performers

COMBAT AND ELIMINATE COSTLY PARASITES

Field-Tested . . . Time-Proven . . . Economical

B.H. MANGE TREATMENT for Ecto-Parasites



Non-injurious, non-irritating, relatively odorless specific for sarcoptic mange, lice, fleas and stubbornly resistant ticks—on dogs, sheep, swine, beef cattle. One treatment kills insects, acarians and eggs. Principal ingredient of oil-free formula is gamma isomer of benzene hexachloride—triply destructive to parasites as a fumigant, contact and stomach poison. Effective for dipping sheep for scabies. Spray or dip. Dogs: 1 oz. in 3 to 4 gal. water. Other animals: 8 oz. in 12 to 20 gal. of water. 8 oz. and 1 gal. bottles.

F. C. SWINE WORM POWDER for Endo-Parasites



Free-flowing powder containing most effective anthelmintic known for large round worms in swine. Requires no starving or curtailing of water supply. Simply mix with feed: one pound with 200 pounds regular ground ration treats 75 to 100 fifty-pound shoats. Also provides purgative, tonic, diuretic and antiseptic actions. Active ingredients: Sodium Fluoride, Areca Nut, Calomel, Arsenic Trioxide. 4 oz. and 1 lb. jars.

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from research laboratories

... experiment stations

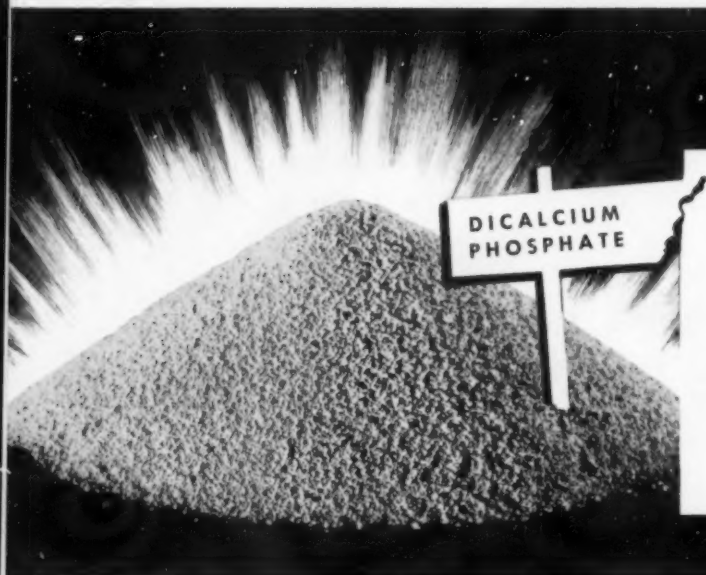
... feedlots

**Research shows the
penalties of feeding**

“phantom” phosphorus

Recent data, reported on the following pages,
reveal how “phantom” phosphorus penalizes feed
performance . . . show there is a big difference
in feed phosphorus sources.

Research shows why is today's superior



Chemically processed and purified dicalcium phosphates are produced by reacting phosphoric acid with limestone. Such phosphates are uniform ... consistently high in biological availability ... low in fluorine. Newer research shows that dicalcium phosphate provides superior phosphorus nutrition for farm animals at lower cost.



Curacao Island Phosphate is an imported raw rock phosphate. Quality varies ... averages less than 70% available phosphorus for chicks. High fluorine content limits its use in animal feeds. High "phantom" phosphorus content makes it an expensive source of feed phosphorus.



These by-products of the meat packing industry vary in biological availability. They may penalize feed performance with "phantom" phosphorus—phosphorus that farm animals can't utilize. Fluorine content is often high. Bone meal products also may add unnecessary cost to farm feeds.



Soft phosphates are raw, unprocessed rock products ... often high in clay and silt. Fluorine content also is high ... safe only in small amounts for short periods. Soft phosphates are low in biological availability ... high in "phantom" phosphorus.

dicalcium phosphate phosphorus source

**Works harder nutritionally than bone meal,
Curacao, soft phosphates, or any other source
containing "phantom" phosphorus***

Purdue University nutritionists recently boosted pig gains as much as $\frac{1}{2}$ lb. per head daily . . . just by replacing a commonly used, raw phosphorus source with dicalcium phosphate.

Other university tests show similar results for cattle, chicks and poults.

The reason, say nutritional fact finders, is "phantom" phosphorus . . . phosphorus in the feed that's biologically out of reach for farm animals. It's the portion (often high) that is biologically unavailable.

Such evidence has led to a re-evaluation of feed phosphorus sources, including such old stand-bys as bone meal. It explains why so many feed manufacturers are now fortifying feeds with new, high-potency dicalcium phosphate

products like International's superior quality Dynafos.

Dicalcium phosphates are chemically produced so nutritional quality can be carefully controlled. Fluorine content also can be held far below safe standards set up to protect animal health. And such phosphates eliminate any possible hazard of carrying disease.

Since phosphorus affects the performance of all other ingredients in a ration, the development of superior sources like Dynafos provides new profit opportunities for the farmer. It frees him from the penalties of "phantom" phosphorus . . . assures the faster gains and higher production that complete phosphorus nutrition can provide.



*"Phantom" phosphorus is the phosphorus from low-grade unprocessed phosphates that is biologically unavailable . . . out of reach of farm animals. It can't contribute to feed performance.

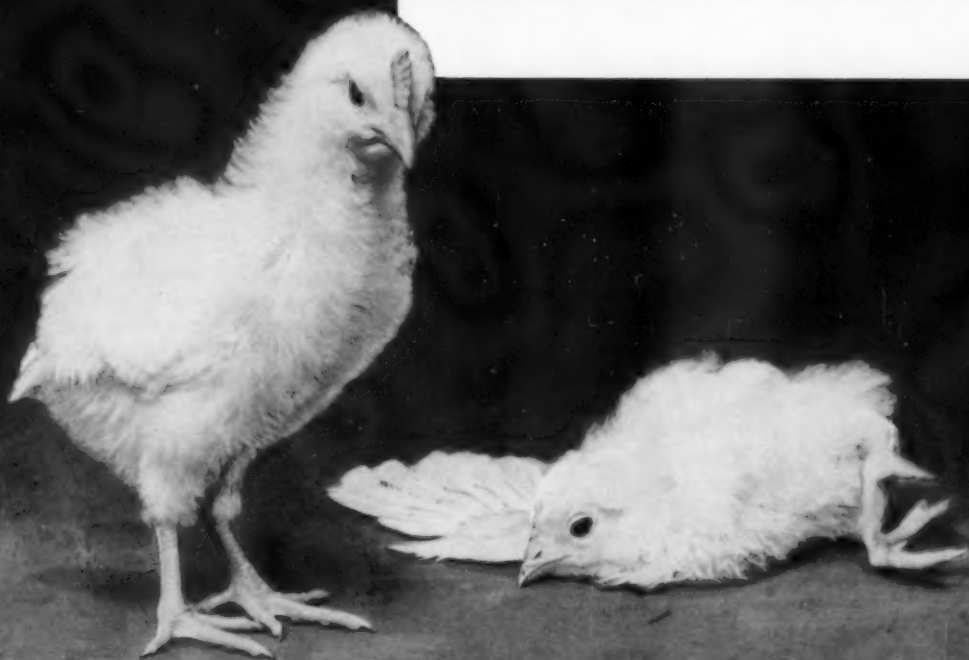
**One pound of dicalcium phosphate
supplies as much usable phosphorus
as 2 to 9 pounds of unprocessed,
raw phosphates . . .**



**manufacturers of
dynamic *DYNAFOS*
dicalcium phosphate**

SPECIFICATIONS	DYNAFOS	SOFT OR COLLOIDAL PHOSPHATE	CURACAO ISLAND PHOSPHATE	BONE MEAL
1 PHOSPHORUS CONTENT	18.5%	9.0%	14.0%	13%
2 DYNAMIC (BIOLOGICAL) VALUE	100	Less than 25	70	70-100
3 LBS. OF USABLE PHOSPHORUS PER TON	370 lbs.	Less than 43.0 lbs.	196 lbs.	182- 260 lbs.
4 MAXIMUM FLUORINE CONTENT	1,200 ppm	15,000 ppm	5,000 ppm	600- 8,750 ppm

"phantom" growth, boosts



Only the kind of phosphorus was different

"Phantom" phosphorus in poultry feeds may cause mild or severe phosphorus deficiencies. Such phosphorus acts as a nutritional barrier in feeds because it's biologically out of reach.

dynamic
IDYNA•FOS

International's dynamic Dynafos is a chemically produced dicalcium phosphate. Its superior biological availability and low fluorine content provide low-cost insurance against mild or severe phosphorus deficiencies.

phosphorus slows chick mortality, steps up costs

Dicalcium phosphate assures the higher biological availability and complete phosphorus nutrition modern poultry flocks require

Three-pound broilers in 6 weeks . . . 2.00 feed conversion! That's the goal today's broiler growers are shooting at. Other poultrymen expect better chick and poult growth . . . higher rate of lay.

Low-grade, unprocessed phosphates can't meet the stepped-up need for full, nutritional power. They shackle feed performance with "phantom" phosphorus that poultry and livestock can't use.

That's why dicalcium phosphate products . . . with their consistently higher biological availability . . . are used by more and more feed manufacturers today. Their greater nutritional power is shown by college tests.

For example, in recent studies at Ontario Agricultural College, dicalcium phosphate grew chicks nearly 25% faster than ground rock phosphate . . . on $\frac{1}{2}$ lb. less feed per lb. of gain.

South Dakota State College studies show that dicalcium phosphate is 3 times more effective for poults than Curacao . . . at least 4 times more effective than soft phosphates.

Such research emphasizes how "phantom" phosphorus can penalize feed performance. It cancels the effectiveness of more expensive ingredients . . . cuts down profits.

Chemically processed and purified dicalcium phosphates — such as International's Dynamic Dynafos — meet this need for a harder-working feed phosphorus. It's a safe . . . sure . . . economical way to assure complete phosphorus nutrition.

Today's poultry need more phosphorus

To reach today's goal of 3 lbs. in 6 weeks, a broiler must convert nearly 79% more phosphorus every day to its bodily needs than a well-fed broiler of 15 years ago.

Layers need more phosphorus, too. An average hen makes 70 more trips to the nest than the average hen of 1935 . . . must convert 57% more phosphorus every day to the job of producing eggs and staying healthy.

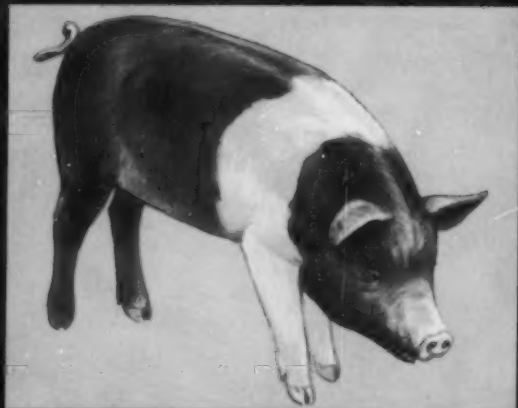
International leads the way in phosphate research

Each year International's scientists conduct more phosphorus research than the rest of the phosphate producers combined. The development of a superior dicalcium phosphate — dynamic Dynafos — makes the benefits of this research available to poultrymen and livestock producers.



International's research is geared to find the answers to all phases of phosphorus nutrition and production.

"phantom" phosphorus down gains, cuts



DICALCIUM PHOSPHATE
1.38 lbs. av. daily gain



SOFT PHOSPHATE
.84 lb. av. daily gain

At Purdue, pigs gained more than $\frac{1}{2}$ lb. faster per day . . . on nearly $\frac{1}{2}$ lb. less feed per lb. of gain . . . when dicalcium phosphate replaced soft phosphate.



.25% PHOSPHORUS
2.93 lbs. av. daily gain



.18% PHOSPHORUS
2.46 lbs. av. daily gain

At Iowa State College, fortifying fattening rations with additional dicalcium phosphate boosted gains nearly $\frac{1}{2}$ lb. daily . . . cut 1.4 cents off the cost of each pound of gain.

makes feeds lazy, slows feed efficiency

New college work confirms that livestock need a harder-working phosphorus . . . dicalcium phosphate supplies it

Feeding trials at leading colleges and experiment stations show that feed phosphates containing "phantom" phosphorus can disable feeds nutritionally. And these same tests indicate that dicalcium phosphates deliver superior nutritional results.

When Iowa State College researchers fortified fattening rations with higher levels of dicalcium phosphate, they boosted cattle gains by an average of nearly $\frac{1}{2}$ lb. daily.

In these tests steers fed a ration containing .18% phosphorus — the customary recommended level — gained 2.46 lbs. per day at a cost of 16.4 cents per pound. But when dicalcium phosphate raised the phosphorus level to .25%, the steers gained 2.93 lbs. per day. The cost per pound of gain dropped to 15 cents.

Oklahoma A & M work shows that "phantom" phosphorus from low-grade phosphates also penalizes cattle gains. In a 3-month feed-

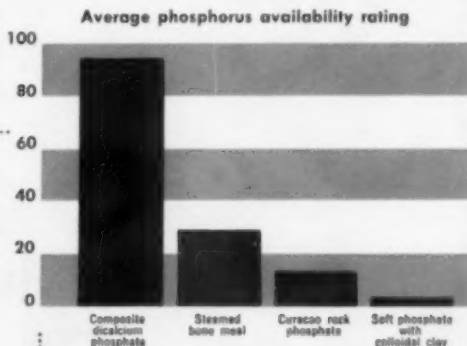
ing trial, calves fed a ration containing soft phosphate gained only 57 pounds. Calves fed dicalcium phosphate gained more than $2\frac{1}{2}$ times as much — 145 lbs. — in the same period.

Pigs too make faster, more efficient gains when rations contain top-quality phosphorus. At Purdue, pigs fed soft phosphate averaged only .84 lb. of gain daily . . . required 2.72 lbs. of feed per lb. of gain. Pigs fed an equal amount of phosphorus from dicalcium phosphate averaged 1.38 lbs. daily — more than $\frac{1}{2}$ lb. extra gain daily. And it took nearly $\frac{1}{2}$ lb. less feed per lb. of gain.

Other research shows similar results. This big difference in phosphorus quality is one reason why many leading feed manufacturers are using superior quality dicalcium phosphates, such as International's dynamic Dynafos, in their livestock feeds. It's the economical way to insure complete phosphorus nutrition.

Tests prove the high biological availability of dicalcium phosphate

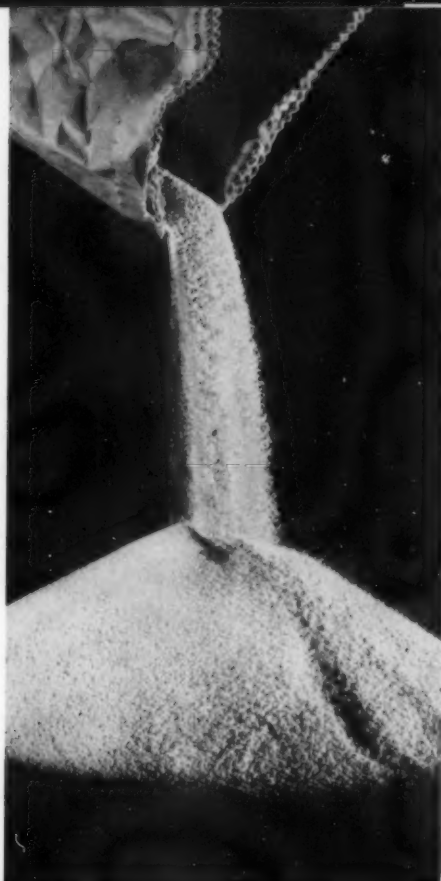
An *in vitro* fermentation study with rumen organisms provides further evidence that dicalcium phosphate rates much higher in available phosphorus than ordinary feed phosphorus supplements. Results of this Iowa State College study are shown in the bar graph.



All phosphorus supplements were compared to a standard sodium-potassium phosphate mixture.



manufacturers of
dynamic **DYNAFOS**
dicalcium phosphate



dynamic Beaded

DYNAFOS

is today's superior
feed phosphorus source

Uniform beaded texture . . . dustless . . . free-flowing. Dynamic Beaded Dynafos — International's dicalcium phosphate — combines every advantage of an easy-to-handle product with nutritionally superior results. That's why so many leading feed manufacturers are helping farmers beat the high cost of "phantom" phosphorus with International's dynamic Dynafos.

Proven high biological availability assures more usable phosphorus in every pound . . . a harder-working dicalcium phosphate for modern feeds.



Get detailed data in
this *Free* book

This FREE booklet documents the facts about "phantom" phosphorus. It includes the latest scientific developments in phosphorus nutrition . . . research reported by leading colleges and experiment stations. And it reviews International's own extensive research in all phases of phosphate nutrition and production. It's yours for the asking. Simply write: Technical Service Department . . .



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NEW antibacterial, antifungal ointment

A new bactericidal and fungicidal agent, Triocil is especially valuable in the treatment of skin infections and other types of dermatoses, otitis externa, eczemas, balanitis, cuts, lacerations, gland infections, and other skin conditions where infection is a factor.

Triocil has these important advantages:

- a strong affinity for tissue, prolonging its action.
- exerts a killing effect (not merely inhibitory).
- has a wide range of action (effective in mixed infections).

- no resistance has developed in extensive clinical tests.

Administration: Triocil Ointment should be applied directly to the affected area. It spreads easily and adheres well. Usually one application daily is sufficient, but treatment may be repeated as often as necessary.

Supplied: Tubes of 20 and 50 grams, convenient both for hospital and office use and for dispensing.

Available exclusively through ethical veterinary distributors.

Triocil

Brand of hexetidine

TRADEMARK

OINTMENT 0.5%

DIVISION OF VETERINARY MEDICINE

WARNER-CHILCOTT

Laboratories ... MORRIS PLAINS, N. J.

new! specific!

investigators report

ENTEUFUR^{T.M.}

AVAILABLE THROUGH YOUR PROFESSIONAL VETERINARY DISTRIBUTOR

Now, for calf scours, "the nation's top calf killer . . ."¹
a new specific: safe, rapid-acting ENTEUFUR. Highly effective,
ENTEUFUR produced cure rates of 93-95% compared to only
12-13% recovery in untreated controls in clinical trials.^{2,3}

Investigators state: "Even calves with very bloody feces
and moribund aspect when first seen made . . . a surprisingly
rapid and complete recovery."³ Beneficial effects are
often obvious in the first 12 hours of treatment, with
complete recovery after only 3 or 4 doses.² Calves raised
on milk-substitute show a recovery rate on ENTEUFUR
comparable to that of nursing calves. No toxic effects have
been demonstrated during administration of higher than
therapeutic doses for prolonged periods.² Bacterial
resistance does not tend to develop during treatment
with the *nitrofurans* and has not been demonstrated
in vitro or in vivo with ENTEUFUR.

Each ENTEUFUR Bolus, Veterinary, small, contains
Furamazole® (brand of nifuraldezone) 1 Gm.—a new
nitrofuran, selected for its specific bactericidal action
against enteric bacteria including the virulent strains of
E. coli found in calf enteritis—and bismuth subsalicylate
0.26 Gm. for its mildly astringent,
antidiarrheal action.

DOSEAGE: 1 ENTEUFUR Bolus Veterinary, small,
for each 150 lbs. body weight, or less, twice
daily for 2 or 3 days. In most cases,
4 doses are sufficient for full recovery.

REFERENCES: 1. Segard, C.P.: *Farmer's Digest*, May, 1955.
2. Henry, R. T., and Blackburn, E. G.: *Vet. Med.*, in press.
3. Bull, W. S.: *N. Amer. Vet.*, in press.



SUPPLIED:

ENTEUFUR Boluses Veterinary, small (3
Gm. each) are available in box con-
taining 6 envelopes of 4 boluses each.

for calf enteritis

93-95% recoveries



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Wanted—Veterinarians

Assistant veterinarian wanted in Cleveland small animal hospital. State references, experience, salary expected in first letter; Ohio license. Address "Box E 5," c/o JOURNAL of the AVMA.

Director wanted for municipal zoo; starting salary \$4,632-\$5,052 per year, depending on qualifications. Duties to include management, educational promotion, and research in cooperation with Zoological

Society. Minimum 3 years' experience in a position of responsibility related to carnivora and herbivora. Graduate in zoology or related subject preferred. Apply Winnipeg Board of Parks and Recreation, 160 Princess St., Winnipeg 2, Manitoba, Canada.

Assistant wanted in busy, small animal hospital in large eastern city. Want a man who is interested in working 2 to 3 years and eventually leasing or buying hospital and practice. Will consider June graduate; wonderful opportunity for capable man who is not averse to work. Address "Box E 30," c/o JOURNAL of the AVMA.

Associate veterinarian wanted in modern, lucrative small animal clinic in southern California. Excellent working and living conditions; coastal area, ideal climate, water sports, boating, no smog. Address "Box E 34," c/o JOURNAL of the AVMA.

Assistant wanted for busy small animal practice in the South; some large animals. Modern, well-equipped hospital. Salary commensurate with qualifications with possible percentage arrangement. Address "Box E 35," c/o JOURNAL of the AVMA.

Veterinarian wanted to take over mostly large animal practice in central states by July 1 as assistant or by ownership; salary or commission or both. No real estate to buy; long lease if desired. Owner has other interests. State age, marital status, and other personal data, farm experience, and any extracurricular activities of note. Desirous of closing agreement by May 1. Send complete and detailed letter stating salary or other arrangements and references. Address "Box E 38," c/o JOURNAL of the AVMA.

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AMERICA'S LARGEST PRINTERS TO THE PROFESSIONS

new "far superior"
treatment for retained placenta

Therapeutic failure, frequently encountered in retained placenta, can be prevented—with new FUREA Veterinary which combines the potent wide-range bactericidal and deodorizing action of FURACIN* (brand of nitrofurazone) with the cleansing action of urea. FUREA Veterinary boluses disintegrate readily and are nonirritating and nontoxic.

In retained placenta, treatment with FUREA has produced quick improvement of the general condition of the cow with lessening or elimination of malodor. Fertility rate remained unimpaired in over 90% of treated cows.*

SUPPLIED: Each bolus contains 0.12 grams of FURACIN and 12 grams urea. Bottle of 25.

DOSE: Two boluses inserted into the recently pregnant horn. One bolus may be placed in the non-pregnant horn.

*Jones, S. V.; Belloff, G. B., and Roberts, H. D. B.: Vet. Med. 51:413 (Sept.) 1956.

For vaginal infections, including those caused by *Vibrio fetus*, that may prevent conception, or cause abortion, dispense: FURACIN Suppositories Veterinary, large. Box of 12.

FUREA^{T.M.}
VETERINARY

AVAILABLE THROUGH YOUR PROFESSIONAL VETERINARY DISTRIBUTOR



Wanted—Positions

Preveterinary student, 1 year of college, age 21, wants work in clinic in Illinois or Wisconsin this summer. Experience as kennelman. Address G. Stromberg, 102 Howard Dormitory, Parsons College, Fairfield, Iowa.

Experienced veterinarian desires position in mixed or small animal practice leading to partnership, lease, or purchase. Licensed in Ohio, Delaware, Washington, D.C. Address "Box E 28," c/o JOURNAL of the AVMA.

Experienced 1954 Cornell graduate desires position leading to partnership or purchase of northeastern mixed practice. Available in June. Address "Box E 32," c/o JOURNAL of the AVMA.

Position wanted in progressive small animal hospital leading to partnership or ownership; New York license. Will consider other states pending state board examinations. Six years of small animal and general practice experience. Address "Box E 29," c/o JOURNAL of the AVMA.

Graduate, 1954, desires position in mixed practice; licensed in California, Minnesota, Wisconsin; will consider any area. Married, 27; separate from

service, July, 1957. Address "Box B 36," c/o JOURNAL of the AVMA.

Small animal position desired around Chicago and vicinity leading to permanent association. Experienced and married. Address "Box E 33," c/o JOURNAL of the AVMA.

Veterinary bacteriologist with European degree, for the last 5 years employed at a university institute, looks for suitable position, preferably in the industry. Address "Box E 37," c/o JOURNAL of the AVMA.

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Want to purchase, or lease, well-established small animal hospital with living quarters, New York City or area. Must be reasonable. Address "Box E 27," c/o JOURNAL of the AVMA.

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(Continued on page 57)

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1. Masler, J. E.; Vet. M. 50:605, 1955. 2. Broakey, R. S.; Holt, S. H., and Siegel, D.; J. Michigan M. Soc. 54:805, 1953.

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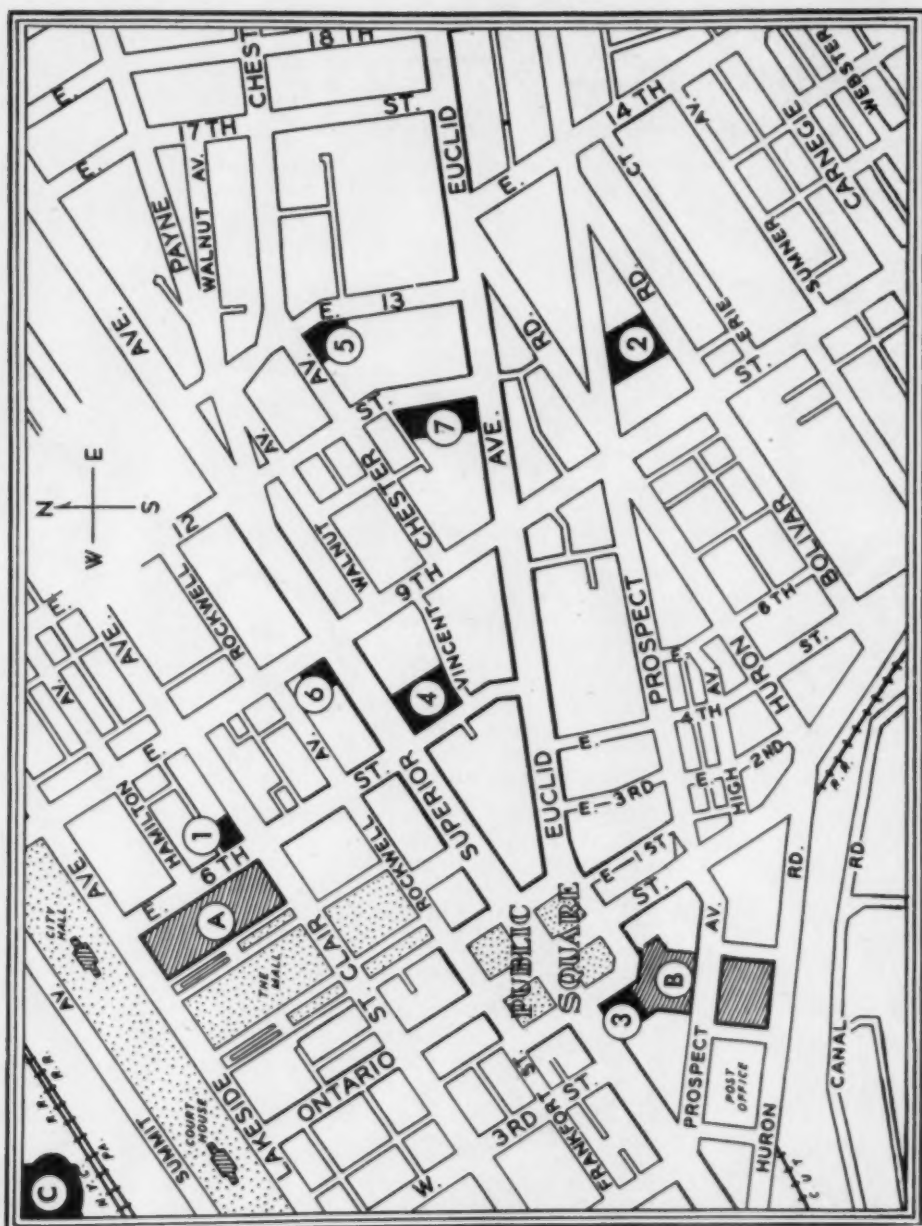
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Ninety-Fourth Annual AVMA Meeting, Aug. 19-22, 1957

All requests for hotel accommodations will be handled by a Housing Bureau in cooperation with the Committee on Local Arrangements. The Bureau will clear all requests and confirm reservations.

Hotels and Rate Schedule

Hotel	Single	Double	Twin	Suite
1. Auditorium	\$4.75- 8.00	\$ 7.50-10.00	\$10.00-12.00	\$25.00
2. Carter	\$5.50- 9.25	\$ 8.50-13.50	\$ 9.50-14.25	\$26.50-36.50* \$40.00-48.25†
3. Cleveland	\$6.50-11.00	\$ 9.00-14.00	\$10.50-20.00	\$20.00-55.00* \$44.00-70.00†
4. Hollenden	\$5.00- 9.00	\$ 8.00-12.00	\$ 9.00-14.00	\$20.00-30.00* \$30.00-60.00†
5. Manger	\$5.00- 9.00	\$ 7.00- 9.00	\$ 9.00-13.00	\$18.00-45.00* \$36.00-75.00†
6. Olmsted	\$4.25- 9.00	\$ 7.00-11.00	\$ 8.50-11.00	\$17.00-20.00
7. Statler	\$6.00-13.00	\$10.00-16.00	\$11.00-18.50	\$24.00-32.00* \$46.50-48.50†

*—2-room suite

†—3-room suite

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To: HOUSING BUREAU, Cleveland Convention and Visitors Bureau, Inc., 511 Terminal Tower, Cleveland 13, Ohio.

Hotel	Accommodations
(Three choices MUST be shown)	_____ Single Room(s) @ \$ _____
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Second choice hotel _____	_____ Twin-bed Room(s) @ \$ _____
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Will be occupied by (attach list of additional names if necessary).

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BARBITURATE
ANTAGONIST...

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Methathorimide, PARLAM

TRADEMARK



FOR BETTER
MANAGEMENT OF
BARBITURATE
ANESTHESIA

There has long been a need for a highly selective, effective and prompt acting barbiturate antagonist which could be used safely and routinely, particularly in emergency states, to reverse the barbiturate action. Such a need is now fulfilled by *Mikedimide*, a clinically proven new drug which exerts its antagonism on almost all types of barbiturates.

Mikedimide acts promptly to increase respiration, restore reflexes and shorten sleeping time.

Mikedimide has a high therapeutic index, and no signs of toxicity have been observed. Animals can be put to sleep or awakened almost at will, by the alternate use of barbiturate and *Mikedimide* without any apparent harm to the animal.

We present below abstracts of a few typical case reports pertaining to the use of *Mikedimide*:

Morphine sulfate (0.5 gr.) was administered subcutaneously and 3 cc. (100 mg.) of pento barbital sodium was given intravenously to a deep surgical plane. The subject suddenly ceased breathing. The heart was weak and reflexes were absent. Two and one-half minutes after respiratory arrest, 105 mg. of *Mikedimide* was given slowly intravenously. The amplitude of respiratory movements markedly increased. Reflexes returned within one and one-half minutes. The operation and recovery were uneventful. The sleeping time was shortened about two hours.

The patient was in shock and appeared to be a poor surgical risk. A single injection (45 mg.) of pento-thal sodium was administered intravenously. Respiration ceased before the injection was completed. The heart was weak and all reflexes were absent. Within 30 seconds after respiratory arrest, 1 cc. (30 mg.) of *Mikedimide* was given intravenously. Respiration was resumed within 15 seconds. The heart became strong and the palpebral reflex returned in one and one-half minutes. Recovery was uneventful.

The patient was anesthetized with surital sodium (480 mg.), given intravenously. Reflexes were absent, respiration was slightly depressed and the heart was strong. Six minutes after anesthesia, *Mikedimide* (120 mg.) was injected slowly intravenously. There was an immediate respiratory response. The palpebral reflex returned at once. At the end of the *Mikedimide* injection, the dog tried to lift his head and sniffed the operating table. Fourteen minutes after the *Mikedimide* injection, the dog was almost conscious. The sleeping time was shortened by 50 percent and recovery was uneventful.

MIKEDIMIDE
is
indicated
for

- 1 Emergency treatment for barbiturate overdose and respiratory depression.
- 2 Routine antagonism therapy against barbiturate anesthesia.
- 3 Respiratory stimulant in the presence of barbiturates.
- 4 Shortening sleeping time under anesthesia.
- 5 Respiratory and circulatory supportive drug in the presence of barbiturates.
- 6 Ambulating an animal shortly after surgery.
- 7 Achieving a "safe plane" of anesthesia during and after prolonged surgery.

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Breedersleve—the disposable obstetrical sleeve. Package of 25 with detachable chest band, \$5.00; lower wholesale prices. Free sample upon request. Breeders Equipment Co., Flourtown, Pa.

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Saint Joseph, Missouri

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Dysfunctions**

**and
FROTHY
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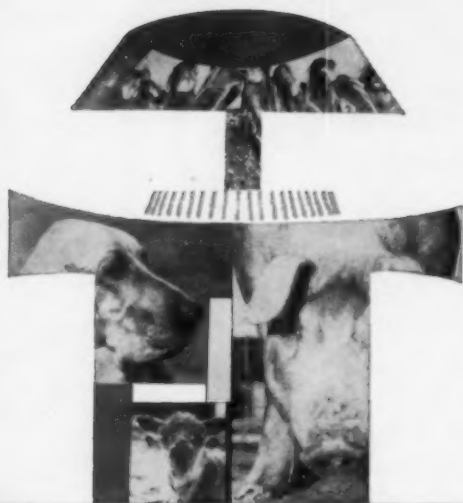
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